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AUTHOR	Yee, Patricia; Madoff, Marjorie
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ABSTRACT

All aspects of a five-week field test of the Information System for Vocational Decisions (ISVD) are reported. Sixteen students were involved; each averaged 3.5 sessions with the system. Results indicate that the most frequently accessed script was the Occupational Preference Script. Nearly half of the students (seven) accessed three data files, and two additional students accessed four files. This correlates with the number of sessions these students had with the system. Case studies for eight of the students who participated in the field test are presented in the following format: (1) use of system; (2) general description; (3) expectations; (4) system activity; (5) reactions; (6) impressions; and (7) general discussion. A variety of outcomes are represented. The appendices contain: (1) samples of the bulletins, letters and forms used in the field test; (2) a copy of the questionnaire for autobiographies together with the responses of the eight case studies; and (3) transcripts of the two final group evaluative sessions. (TL)

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INFORMATION SYSTEM FOR VOCATIONAL DECISIONS

Project Report No. 36

THE BIGELOW JUNIOR HIGH SCHOOL FIELD TEST

Patricia Yee
Marjorie Madoff

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Graduate School of Education
Harvard University

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The Bigelow Junior High School field test information is organized in the following manner. Chapter I describes the organization of the field test and summarizes the inquirers' use of the ISVD. Chapter II is comprised of case studies for eight of the field test participants.

CHAPTER I

FIELD TEST ORGANIZATION

SUMMARY OF SYSTEM USE

FIELD TEST ORGANIZATION

Location and Personnel

The field test site was Conference Room B, a small room located off the main corridor on the school's first floor. School personnel who were most directly involved in the field test were Mrs. Dorothy Kunberger, Head Counselor, and Mrs. Gloria Hanna, secretary. Miss Patricia Yee was the ISVD supervisor. Bigelow Junior High School houses the seventh, eighth, and ninth grades.

Schedule of Activities

Originally the field test was scheduled for an eleven week period beginning on March 3, with the pre-testing and debugging activities to occur during the week of February 24 - 28. Groups of users were to be scheduled, as outlined in Figure 1, for a varying number and frequency of sessions to determine what effects these dimensions would have on the inquirer and his interactions with the system. Twenty-two students were to comprise the field sample.

The delay in going into the testing phase until mid-April, however, caused the field test sample to be reduced to 16 and the schedule to be modified from the above pattern to a once a week interaction for each of the inquirers. Pre-trial and debugging activities were conducted during the week of April 21 - 25; the field test, the five week period from April 28 to June 6; and post-testing and conference activities, from June 9 - 13.

Pre-test activities included completion of Part 2, O'Hara-McSherry Test of Occupational Knowledge (TOK), and the writing of a career development autobiography. The autobiography was required to address itself to the following questions:

1. What kind of person are you?
2. How did you get to be that kind of person?
3. What kind of career do you think you will go into?
4. Why do you want to go into this career?

During their first interaction, inquirers were routed to the Occupational Preference Script.

Number of Sessions Per Student	Number of Students Scheduled for Sessions	Frequency of Sessions
11	3	Once a week for 11 weeks
9	4	Twice a week in a 5-week block period; 2 students will use the computer during the first 5 weeks, 2 during the last 5-week period
7	8	Because students scheduled for 11, 9, 5, and 3 sessions will have priority in terms of specific dates, inquirers slated for 8 sessions will be scheduled whenever it is possible.
5	4	Once every 2 weeks
3	3	Once a week for 3 consecutive weeks (1 student for first 4 weeks, 1 student for second 4 weeks, 1 student for last 4 weeks)
154 Total Number of Individual Sessions	22 Total Number of Students	

7 = Mean Number of Sessions Per Student

Figure 1

Original Eleven Week Field Test Schedule

Post-test activities included a second administration of the TOK, part 2, and the writing of a second career development autobiography, with a fifth question added:

> "Has there been any change in your choice of career and, if so, why?"

Dorothy Kunberger conducted two small-group meetings in which the students were encouraged to discuss their experiences with the system, their reactions, and any suggestions they might have for its improvement. The transcripts of these sessions are shown in Appendix C.

Because of limited exposure to the system, the results from the Test of Occupational Knowledge were inconclusive. The pre and post test autobiographies of the eight students selected for case studies are included in Appendix B. The information forms in Appendix A are the bulletins, letters, and forms used in the Bigelow Field Test.

Selection of Students

Several considerations affected the selection of inquirers for the field test study sample. To adequately gauge the system and its effectiveness in helping students learn to make reasonable choices in planning their educational and vocational careers, it was necessary that vocabulary and comprehension problems be kept to a minimum. Therefore, the majority of the field sample would have an above average reading ability and an average or above average Bigelow IQ score. However, some balance was desirable to reflect the range of IQ scores.

Only a small number of students could be included in the study because of the shorter duration of testing time. Also, the length of the sessions and the specific time blocks would be determined by the regular school schedule. With these considerations in mind, the following guidelines were established:

(1) Students would be selected from the ninth grade on the assumption that they would be more concerned about their future plans, having made recent decisions about high school curriculum and course designations.

(2) Only students for whom there was seventh and eighth grade educational information in the Inquirer Characteristics Data Base would be considered.

(3) Students preferably would have a free period during which weekly sessions with the system could be scheduled.

(4) An equal number of boys and girls would be chosen.

Mrs. Kunberger was given the responsibility for selecting the test sample since she had access to school records, was acquainted with the student body, and could easily handle scheduling and other administrative tasks. From the list of ninth graders for whom there were educational history data, the original 22 students were selected in January 1969. Because of delays in entering the field until April, the number of students was reduced to 16. Preference for the study sample was given to several who earlier in the school year had expressed interest in a computer club. Eight of the sixteen students in the final selection fit into this category, including case study students with code names A, B, F, and H.

Tables 1 and 2 indicate the IQ scores and curriculum designations of the 16 students comprising the study sample and the eight selected for case studies.

IQ Score Range		Number of Students in Sample	Number of Students in Case Studies	Students in Case Studies in Code Letters
110-123	HIGH	9	4	A,B,C,H
95-109	AVERAGE	3	1	F
83-95	LOW	4	3	D,E,G
	TOTALS	16	8	

Table 1

Sample Student Classification by I.Q. Scores*

* The Otis Quick-Scoring Mental Ability Test: Form Em - New Edition is used at Bigelow. This is a test to see how well a student can think. The Otis attempts to measure ability in the verbal and non-verbal skills necessary for academic work. It contains questions of different kinds. Under each question there are four or five possible answers. You are to read each question and decide which of the answers is right. The test contains 80 questions and 30 minutes are allowed to complete the test.

As shown in Table 2, most of the study sample were in the "College Preparatory" curriculum, a few in the "General" curriculum.

	Entire Sample	Case Studies	Students in Case Studies by Code Letters
COLLEGE PREP.	12	6	A,B,C,F,G,H
GENERAL	4	2	D,E

Table 2

Sample Students Classified by Curriculum Designation*

* At Bigelow Junior High School there is heterogeneous grouping with tracks for math [Illinois Math (accelerated) Algebra and General Math]. The other tracks are for foreign language, Home Economics, and Industrial Arts. Students are not tracked for English, social studies, and general science. A curriculum designation of "College Preparatory" would be given to students who elect algebra, Illinois math plus a foreign language. "General" indicates a student selection of general math plus industrial arts (home economics for girls and industrial arts for boys).

Scheduling

Computer usage was from 9 - 11:00 A.M. on Monday through Friday and from 1 - 3:00 P.M. on Monday, Wednesday, and Friday, with sessions scheduled during periods 2 and 3 on Monday through Friday, and periods 6 and 7 on Monday, Wednesday, and Friday. The specific designated times were as follows:

Period	Time
2	9:21 - 10:03
3	10:05 - 10:47
6	1:02 - 1:45
7	1:47 - 2:30
School dismissed	2:36

Minutes Per Session on System = 40

Table 3

Bigelow Schedule

There were a total of 16 sessions per week, with each session planned for 40 minutes in duration. Table 4 indicates the designated time block for each of the field test students.

ACTUAL TIME SCHEDULE

PERIOD	MON.	TUES.	WED.	THURS.	FRI.
2	X	B	C	H	X
3	A	D	E	X	F
6	X		G		X
7	X		X		X

[Letters refer to code names in case histories; X to other students in sample.]

Table 4

Specific Student Schedules

Although the time from 2:30 - 3:00 P.M. on Monday, Wednesday, and Friday was originally scheduled for optional use of the system by interested students on a sign-up basis with priority given to seventh and eighth graders, this plan proved to be unfeasible because of computer down time.

Scheduling each student for a particular time block was based on the assumption that most of the time utilized for ISVD would come from General Elective Blocks of time, Ninth Grade Elective Periods, Study Periods, Contract Periods. A minimum of interference with academic class work was accomplished. No math or foreign language classes were missed. The English-social studies teachers were agreeable to the idea of excusing individual students from these classes whenever necessary. Also, the science teachers allowed 3 or 4 science periods per week. In general, a high degree of cooperation and interest was evident.

SUMMARY OF SYSTEM USE

Frequency of Use

Table 1 shows the frequency distribution of number of sessions by students:

Number of Sessions	0	1	2	3	4	5	>5
Number of Students	0	0	2	5	4	5	0

N = 16 Students

Median number of sessions: 3.5

Mean number of sessions/student: 3.7

Table 1

Distribution of Sessions

Table 1 indicates that 56% of the students (9/16) had four or more sessions with the system, and all had at least two sessions. There were a total of 60 sessions held.

A complete session was 40 minutes long. Of the 60 scheduled sessions, approximately 37% of the total, or 22 sessions, were complete. There were 38 sessions which were incomplete, or less than the scheduled 40 minutes. All but four of these were due to machine failure. Student tardiness, scheduling problems, and a fire drill accounted for the other interruptions.

Therefore, although most of the students had four or five sessions with the system, the majority of these sessions were not 40 minutes in length. The following table shows the time in minutes that each student spent on the system. [Table 2, page 8]

For 32% of the total scheduled time the system was down or not in use. Only 6 of the 16 students had more than two hours of accumulated time on the system, and 2 students had less than one hour. No student had all of his sessions as complete sessions; therefore, every student was exposed to machine failure at one time or another during his sessions. The eight

S	Student Time on the System in Minutes	Total Time Available in Minutes	Machine Down Time in Minutes	Down Time in Minutes for Other Interruptions
A	76	200	105	19 (student tardy)
B	120	160	40	0
C	170	200	30	0
D	105	160	35	20 (scheduling)
E	89	120	31	0
F	128	160	25	7 (fire drill)
G	140	160	20	0
H	175	200	15	10 (scheduling)
1	61	120	59	0
2	55	80	25	0
3	78	120	42	0
4	65	120	55	0
5	111	120	9	0
6	40	80	40	0
7	122	200	78	0
8	91	200	109	0
Total 16	1626	2400	718	56

S = Student

Total time on the system for all students: 1626 minutes

Total down time: 774 minutes

Total potential time available as scheduled: 2400 minutes

Table 2

Student Time on the System

students designated by letter were those chosen for case studies. They were primarily selected on the basis of best functioning system use and the least amount of session down time. However, several students with special characteristics were included in the case studies to provide for a range of intelligence and reading abilities and some contrast in approach to the system. As shown in Table 2, some students had so little time that no in-depth study seemed appropriate. In each case study the down time is indicated when it occurred. It is well to keep in mind that after each machine failure, the initial log-in procedure had to be repeated, so that additional time was spent with no progress occurring.

In spite of the obvious limitations of the field test due to mechanical failure, it is also notable that rarely did a student fail to appear for his scheduled time, and rarely were students tardy for sessions. The time labeled "scheduling" in Table 2 were problems with absent students and substitutes who were called when there was any available extra time. Some of the session time was lost unavoidably when the substitute could not reach the room immediately, and in some instances, substitutes were not called.

System Use by Script Type and Data File

There was enough time spent on the system to access many of the scripts, and a variety of system components. Table 3 summarizes how the system was used by data file and script type.

Type of Script*	Occupation Data Base	Education Data Base Col.	Trd.Sch.	H.Sch.	Military DataBase	Game	Total
Preference	23	13					36
Direct Access		4			1		5
Concept					3	1	4
Template	7	6		1			14
Total	30	23	0	1	4	1	59

Table 3

Use of System Components

* A preference script attempts to elicit the inquirer's attitudes, values, and interests through a series of questions with sets of alternatives. On the basis of these responses, he receives a list of schools or jobs that may be of interest to him. Direct access scripts enable the inquirer to retrieve items of specific information about a particular occupation or school. Concept scripts present general instructional information. Template scripts present job or school descriptions in a standardized format.

In Table 3, use of a script is defined as gaining entry to the script and interacting with the material, whether accessing several items of information or sequencing completely or partially through the sorting procedure of a preference script. If, for example, the inquirer was using @Data-Col to find out about admission requirements at three colleges, this is counted as one use of the direct access script for colleges. If, on the other hand, he goes through the College Preference script twice in succession, to explore other alternatives, this is counted as two uses of the preference script for the college file.

Most frequently accessed were the preference scripts, and specifically the Occupational Preference script. In contrast, the Newton High School inquirers were more interested in college selection, undoubtedly because this choice was of a more imminent nature. Many of the Bigelow students had specific vocational ideas and attempted to explore these areas before seeking information about colleges. Only when an inquirer felt successful with the Occupational script and had sufficient time on the system did he then explore the area of college choice. Perhaps part of this orientation towards occupations was a result of the experience of the initial session in which each inquirer was specifically directed to the Occupational Preference script.

Some relationship would seem to evolve from the number of sessions a student had, and the number of data files he accessed. However, some students were content to concentrate in one area only, so there was no direct proportion between the number of sessions and the number of data files accessed. Some students spent several sessions just repeating a preference script and taking different routes each time to explore possibilities of other choices in the same script. Those with only two sessions had very little time, and the first session for most students was devoted to the introductory material.

Number of Sessions	Data Files			
	1	2	3	4
2	1	1	0	0
3	2	1	2	0
4	0	1	3	0
5	0	1	2	2
Total	3	4	7	2

Table 4

Number of Data Files Accessed by Total Number of Sessions per Student

Nearly half of the students (7) accessed 3 data files, and 2 additional students accessed 4 files. There are many possible explanations for this, but the students with more sessions available certainly had more time in which to explore the system. Since the first session primarily was spent in "learning the mechanics", there may be a critical number of sessions which are necessary before one can explore or access different areas. For some students, the initial interactions may be used for exploring the system rather than concentrating on those areas of particular interest. But Table 4 does indicate that the majority of students accessed three or more data files and those with the most sessions were able to or desired to access more areas.

CHAPTER II

CASE STUDIES FOR EIGHT STUDENTS IN THE BIGELOW FIELD TEST

The eight example case studies are presented in the following format, with an explanation of each section listed below:

1. Use of System
2. General Description
3. Expectations
4. System Activity
5. Reactions
6. Impressions
7. General Discussion

Use of System This category lists the date and time of each session, its length, when noted, and the scripts accessed by the inquirer. A complete session is a full 40 minutes, a partial session, less than 40 minutes. For a partial session, the inquirer's time on the system and the machine down time is noted, if the information is available.

General Description This section attempts to give an objective view of the student and how he relates to his peer group and family. It also describes his approach to the project and his attitude toward the general environment of the field test.

Expectations Before the initial interaction with the system, the inquirer was asked what he expected from the ISVD. His reactions are recorded in this category.

System Activity This section includes a summary of the inquirer's instructions or input to the system and the relevant responses from the system. The extent of the inquirer's interactions with each script and the general nature of the session's activities are discussed.

Reactions Although there is some overlap with the following category, this section gives a generally objective record of the inquirer's attitudes and behavior during each session. Responses elicited from the student, as motivated by his interaction with the computer, are also included.

Impressions A subjective description or an interpretation of the inquirer's reactions to the system are considered "Impressions". Incidental events or environmental changes are described as well as the student's own evaluation of the sessions and his suggestions for improvement.

General Discussion The final section of each case presents a brief overview discussion of all the material available for each student (his autobiography, final interviews, session notes) and an interpretation of his general behavior within the framework of the educational and vocational behavior and attitudes of ninth graders as a group.

CASE STUDY NO. 1

Student A, Boy

Regular Schedule for Session

10:05 - 10:47, Monday

Use of the System

Number of Sessions: 5

Session I: April 28, Partial Session

Session II: May 5, Partial Session
Student Usage -- 20 minutes
Machine Down -- 20 minutes

Session III: May 12, Partial Session
Student Usage -- 20 minutes
Student Tardy -- 20 minutes

Session IV: May 19, Partial Session
Student Usage -- 25 minutes
Machine Down -- 20 minutes in the middle

Session V: June 5, Partial Session
Student Usage -- 15 minutes
Machine Down -- 15 minutes

Scripts Accessed: ITS, ITC, DATA, OCC PREF, COL PREF, O MINOR

General Description

Student A was a personable, talkative young man, of average build, about 5 feet 2 inches tall, with dark hair and eyes. He dressed typically for his junior high group, no extremes in style or length of hair. He was at ease with the supervisory and one of the most enthusiastic of the inquirers. His eagerness seemingly was not stimulated by a need to solve imminent problems, but an impersonal academic interest in the computer and the system. He appeared to be strongly motivated to do well in whatever he undertook, and to succeed in life generally. But at this time he was presented with no particular discontinuities. He seemed stable and well aware of his own position. He realistically expects a long educational program in his future which will enable him to have plenty of time for specific decisions when he is older. All "down time" on the computer was active, for this student engaged the supervisor in discussions on every sort of subject. The student is deeply involved in all his interests and enjoys exploring ideas on many levels.

Expectations

The student said he wanted guidance about colleges, what courses to take, and information about law and other vocational fields.

SESSION I -- April 28

System Activity

This was a short session; the student covered only the introductory material.

Reactions

The student appeared interested and eager to try the system. He was extremely careful and intense about instructions, concentrated in spite of distractions and asked pertinent questions about the mechanics. He was quick to catch on and had no problems with the instructions. He showed amusement and surprise when the machine responded with his name and answered his initial requests.

Impressions

The student liked the system. He quickly memorized his ID number and was enthusiastic and surprised to find the machine responding personally. His intense manner revealed the seriousness of his intentions and interest.

SESSION II -- May 5

System Activity

The student wanted to repeat the commands but to avoid reviewing the introductory material. He tried unsuccessfully to get the College Preference script, and therefore did some work on the Occupational Preference script.

Reactions

The student was somewhat distressed and frustrated by failure to get what he wanted. He felt the pressue of time limitation, both in length of session and number of sessions, and wanted to "get to the nuts and bolts of it" though he "understands research difficulties".

Impressions

The student was somewhat disappointed that he did not get very far with what he wanted. There were many distractions: the repairman came in and out several times, and the computer was down for 20 minutes. He concentrated on the screen but was unable to get anticipated information. Although he thinks the system is unreliable because one can not get control of it, he still is eager to try again. He seemed intrigued by the basic workings of the computer itself.

SESSION III -- May 12

System Activity

He successfully bypassed the review of instructions because he remembered what to do from the last session. He went through the Occupational Preference script and got a list of 12 job titles: college faculty member, secondary school teacher, elementary school teacher, clergyman, case worker, clinical psychologist, minister, rabbi, priest, home economist, guidance counselor, research assistant.

Reactions

The student was pleased at his success in avoiding the repetition of the introductory material. He responded to the salary section of the Occupational Preference script with, "Oh man! Crazy question!" When he finished the session, he sat back and said, "Fantastic' Got something finally." Although the job title list brought some surprises, others were expected as they involve working with people.

Impressions

The student arrived late and was quite upset that he had missed most of the session. He was nervous because he did not want to waste time, and therefore, was very intent on what he was doing. Because he had some concrete evidence of results in the form of a job list, he seemed more hopeful about the system and its potential than he had been at the

last session. He also had his first suggestion for improving the system. He feels you have to repeat too much in order to get to the information. "You have to get through so much stuff to get the information."

SESSION IV -- May 19

System Activity

The student reviewed some introductory material before the system went down for thirty minutes. Then he had to start over again, but misspellings, mistyping, malfunctioning of the slide projector, and keyboard-CRT misspacings caused him much difficulty in the remaining 18 minutes of the session. The supervisor finally stepped in and executed the College Template script. After the student saw the general information about Harvard, he requested information about admissions and was successfully routed to that section.

Reactions

The section of admissions included template sentences with blanks. Upon seeing these blanks, the inquirer responded, "I don't believe it!" At the explanation that data is still incomplete, he seemed amused and critical that it should appear anyway in a series of blank statements. He suggested (and the supervisor agreed) that such statements be eliminated or completed.

Impressions

"I was almost there but not quite" was the student's summary of this session. He was distressed when the computer was not working and felt that it was really in control, not the student. But when it started working again, he felt back in command and able to direct it fairly quickly and accurately to the information he wanted. He repeatedly reacted with indications of disappointment in the lack of depth of the material. He was extremely attentive, as indicated by his posture and attitude while reading instructions and typing his answers. He still felt the pressure of time,

stimulated in this session by the malfunction of the machine. When asked to comment about suggestions for improvement, he stated that you should be able to pick up where you left off so that you won't have to go through all the introductory material each session.

SESSION V -- June 5

System Activity

In the very brief first ten minutes before the system went down, the student tried to get entrance requirement information about Harvard. He finally got the College Template, which had sentences with blanks instead of information. After ten minutes of down time, he tried again.

Reactions

The student tried to hurry and made many typing errors and misspellings. Then Harvard, Harvard College and University of Harvard were not recognized, by which time the computer was down. When the blank template sentences appeared, he was very annoyed and commented, "Kind of useless".

Impressions

This student never had one complete session in his five times on the computer. He was very much involved in what he was attempting to do, and, therefore, felt very deeply the frustration of being cut off. This last session was in two brief parts, and offered little satisfaction to the student's search for information. His intensity at times seemed to cause him to make errors, and his annoyance often added to the pressure he already felt, from lack of time and machine problems.

General Discussion

Student A is a bright, sensitive, intense young man who initially approached the computer with enthusiasm. His expectations for the system were very great. Mechanical problems and lack of time constantly plagued him, with the result that his evaluation of the system became more realistic. He felt a lack of depth in the material, and limitations in accessing the exact information he sought. At times he was quite pleased with his success, but it was more a satisfaction of man over machine, than any gratification of real objectives. In the final group interview, he says, "I don't even think it was fun. I came here just knowing that it would break down. I finally did get a list of jobs. I can see how they got it -- it was fairly close. But in junior high -- our age, I think you're wasting your system. I think it would be good for college kids and high school kids, like juniors and seniors."

He really felt the machine could present a good fact sheet, but that he was not ready for that type of information. What he thought was needed at his age level is a personal analysis of interests, capacities, and goals which would give a direction for vocational concentration rather than specifics. In the final group interview, following another student's comment that the "computer can give you an idea of what jobs are like", he remarked, "I agree with his theory, but I don't think the machine is the thing that can do it. I don't think it knows abough about you, your personality. You go through about eight or nine questions or so, asking which you prefer, what income bracket, etc. -- but it doesn't know enough about you personally, your mind, etc. I think it would be much easier to talk to a guidance counselor about it, who knows you as a person, than to a computer.

As shown in the autobiographies, student A believes that the vocation he chooses really must be determined by what he is as an individual. His serious and mature self concept is revealed through his interests and values, and in a realistic evaluation of his own capacities.

He thinks it is important that his values and interests be influenced by the realities of contemporary society. He feels some more urgency to "help people" and enter "social service", and this presents somewhat of

a conflict between his ambition for financial success and his social responsibility. This conflict of "materialism versus idealism" is not insoluble to him, since he feels that several career choices of working with people, can satisfy both goals. The legal profession seems particularly tailored to his needs because his greatest satisfaction is in intellectual challenge -- "pitting myself against another person's mind".

At this time in his life, the student was not faced with any real discontinuities. He had found an area in which his interests and social conscience are satisfied and one in which he feels amply confident of his abilities. It is also a profession that is acceptable to both his peer group and his family and teachers. Though he had not decided specifically on the legal profession, he felt no pressure for narrowing his choice at this point in time because he's only in the ninth grade. Thus, working with the system had little effect on him, except to confirm his belief that personal analysis is necessary for guidance.

CASE STUDY NO. 2

Student B, Girl

Regular Schedule for Session

9:21 - 10:03, Tuesday

Use of the System

Number of Sessions: 4

Session I: April 29, Complete Session
Student returned after school the following day for a 30 minute session

Session III: May 14, Partial Session
Student Usage -- 25 minutes
Machine Down -- 15 minutes in the middle of session

Session IV: May 27, Partial Session
Student Usage -- 15 minutes
Machine Down -- 25 minutes in the middle of session

Scripts Accessed: ITS, ITC, OCC PREF, OCC TEMPLATE, DATA, HELPVAROCC

General Description

Student B was a tall (about 5 feet 6 inches), attractive, stylishly dressed young lady. She was very mature and appeared older than her 15 years. With her make-up and chic clothes, she gave the impression of being a sophisticated young woman. She felt comfortable and was quite self-assured with other people, as evidenced when she participated in demonstrations both at Harvard and at Bigelow. She was outgoing and had a vibrant personality. Most of her friends, whom she described as "semi-hippies", were in high school. She was an open, honest individual with a realistic self-awareness. Her most obvious characteristic was impatience. She was action-oriented, eager to move, and anxious for response and immediate results. She approached the computer with curiosity and was soon distressed by its slowness. Her own responses were often too quick and, therefore, she made careless mistakes. Her lack of inhibition allowed her a good relationship with the supervisor and the freedom to question anything. Her self-confidence allowed her trial and error and the feeling of being in control of the system. Her eagerness persisted in spite of frustrations.

Expectations

Student B said she wanted "information about jobs, different kinds of jobs."

SESSION I -- April 29

System Activity

The student went through the introductory material quickly and proceeded through the Occupational Preference script two times, but eliminated all jobs on both occasions. Therefore she came in after school the following day to repeat the Occupational Preference script.

Reactions

Student B was eager and impatient. She consistently asked whether to push the send block, type the sentence, etc., but really wanted reassurance in her hurry, as she knew what she was doing. She was disgusted when the CRT did not clear immediately and several times responded before the asterisk appeared or pushed send block before finishing the text. She was quite frustrated at eliminating all jobs on both trials.

Impressions

The student's summary of the first session was, "The machine doesn't work quickly enough." Although she needed reassurance on operating procedures, she took command of the system. Though she was impatient with the machine, she maintained her enthusiasm.

SESSION II -- May 6

System Activity

The student reviewed the introductory material briefly; then she accessed the Occupational Preference script twice. The first time she eliminated all jobs, but the second time she got her first job list:

> organic chemist, industrial designer, zoologist, anatomist, biophysicist, physiologist, pharmacologist, commercial designer, art teacher.

She used the Occupational Template for a description of a biophysicist.

Reactions

The job list was helpful; the information about a biophysicist, interesting, but not detailed enough. A hardcopy was made of both the job list and template description. She had problems with instructions and complained that the blinking words were distracting. She was also confused by the word "script", and found several instructions unclear, commenting that the language should be easier to understand. She often hesitated in pushing send block or typing an answer, because she was unsure of what was expected of her. She queried the supervisor about the number of choices that could be made before a job list would be eliminated.

Impressions

The supervisor thought this session was profitable for the student as she was interacting successfully with the system. The student said, "It is like a big toy. I like it, and I'm happy about the list of jobs." She was less impatient once she had her list, and very much involved with the activities. She made praying gestures while waiting for a list of jobs, and was very pleased to finally get the list. After four rounds of the script, eliminating all jobs each time, she was particularly anxious to take care in selecting the options that would produce a job list. She looked forward to the next session so she could do the Occupational Preference script again and change her selection of options.

SESSION III -- May 14

System Activity

This was an atypical test situation because there were three observers present throughout the session. The student reviewed the introductory material and commented that the instructions were easy to read. She accessed the Occupational Preference script and received her second list of jobs, of which she made a hardcopy. List two:

organic chemist, electrician, accountant, commercial airplane pilot, medical technologist, pharmacist, zoologist, anatomist,

biophysicist, animal husbandman, pathologist, physiologist, pharmacologist.

She then selected to see the description of a commercial airplane pilot. The computer then stopped functioning for 15 minutes.

Reactions

The student operated the equipment well this time, with less hesitancy and carelessness. She commented on the use of the words "yep" and "nope" on CRT responses, stating they were too "computerish". She was constantly distressed by the flashing words. While waiting for her job list, she again remarked that she knew it would not work, and then was most pleased when another list appeared.

She felt the template with the blank sentences did not make sense, and at one point during the description of a commercial airplane pilot, she remarked "Thanks a bunch; I knew that before."

She brought her first job list with her when she came in, and this time noted that there were seven repeats from the first list. She commented that in making selections for the second list, she had concentrated on options that dealt with working with ideas and next time would select variables that involved much activity.

Impressions

"I like it" was her response to this session. Again the student found some faults but generally seemed pleased with the results she obtained. There were three observers throughout the period, but the student did not appear disturbed by their presence. She functioned as she normally did and performed very well. She said she knows what to do. "If you weren't here I think that I could operate it by myself. I might have to read the instructions more carefully though." She felt at home with the system, satisfied with the information she received, undisturbed by observers, and anxious to go on to the next session in spite of the fact that she was frustrated by machine failure for 15 minutes in the middle of the period. It was interesting that this student noted the words "yep" and "nope" calling them "computerish", when the intent this informal language was to appear conversational and uncomputerish.

SESSION IV -- May 27

System Activity

After reviewing the introductory material, the student wanted specific information about a college, but the script wasn't functioning properly so she accessed the Occupational Preference script. She made a hardcopy of the first job list, and then the computer went "down" for 25 minutes. After the system was "up" again, she went back into the Occupational Preference script, and got a second job list. First list:

illustrator, industrial designer, dancer, instrumental musician, clothes designer, stage scenery designer, painter, commercial designer, art teacher.

Second list:

forester, soil scientist, soil conservationist, zoologist.

Reactions

The student remarked at the end of the session, "Very annoying . . . I don't like it breaking down." She was pleased with the first job list, and made a hardcopy of ot, commenting, "I want to see what jobs are the same." She noted that industrial designer and clothes designer were on all three lists. She wanted to get more job lists to find out which jobs would appear on all lists. She also planned to alter several of the options for each list. She did not bother with a hard copy of the second list because "It's nothing like me. I'm very upset."

She again commented several times during the session that she expected to machine to break down and that she did not expect to receive a job list. When the computer did go down she remarked, "I told you it would go down." She discussed the possibility of getting another list if the computer started working again, "I'm very upset because this stupid thing won't go on. I'm very impatient." At one point when her input about college entrance requirements was not recognized, she decided to @STOP because, "I'm very impatient. I don't want to put up with any of that today." Again, in spite of obvious annoyances, she was eager to try again.

Impressions

A technician from Sanders was present but not distracting to the student. She was impatient with the slow responses, and constantly expected mechanical breakdown. When asked for suggestions for improving the system, she replied, "Start getting it better." Her frustration level is lower than some, but her satisfactions have been relatively high. When asked if she felt in control of the computer, she remarked, "I think that I have controlled it since I began." But later when the CRT responded too slowly to suit her, she said, "I don't have any faith in this machine." At another point she said, "I must have eliminated all jobs. It's taking too long." She had command of the system, and was getting the information she wanted, but was often annoyed by breakdown, which she always expected, and often occurred. Other frustration was caused by looping and technical difficulties beyond her control.

General Discussion

In her autobiography, the student starts by saying, "I don't know what kind of person I really am" which appears to be a realistic evaluation, consistent with her behavior and comments in this brief series of sessions. She's a restless 15 year old, very mature physically, and impatient to explore life, with a great deal of self-assurance and faith in her belief, "I can get what I want if I try."

What she wants, as she states it, is a lively, active career that satisfies her energies and gives her financial reward. Her eagerness kept her wanting to come back to the system, and gave her satisfaction when information was forthcoming. Her impatience kept her anticipating failure, in obtaining what she was after, and in the non-controllable aspects of the mechanism itself. She was always contradicting herself -- frustration and satisfaction seemed to appear together. At one point she was aware of selecting two options that did not go together. She said, "Bet I'm going to eliminate all jobs by using both of them. I know I'm going to contradict myself, but I can't help it."

Although she was well aware of her extreme impatience with the system, people, and generally with most things, she accepted this in herself, neither with shame, nor with pride. This was just her way. Since she's this way, she will find a way of life that is "constantly changing, not tedious or boring" and she was quite confident that this is possible. She has thus far very little idea of what sort of education or vocation the future would hold, but she was not in the least threatened by any pressure to choose. She was very much interested in the job lists and the common vocations that appeared on them, and approached it sensibly as some good ideas to consider. The system was personal to her, and she felt comfortable in directing it to help her by presenting her with information and ideas.

She was not hesitant in consistently criticizing the shortcomings which caused her "a lot of aggravations", such as flashing words and difficult instructions. But when her list appeared, or other information was reached, she was not restrained in her enthusiasm. Her moods could change abruptly and reverse her reactions. Occasionally when the system began looping or other technical problems threatened, she would just stop and

shift to another script. If data was not readily available, her mood would determine her degree of persistence.

When asked how she felt about the question, "What do you want to do today?" which introduced the Orient I script, she said, "You have your choice of things to do. You just say what you want to do -- military, jobs, colleges. Why should people have trouble with it. It gets across its points and you answer it." This was a reflection of her self-assurance, and impatience with indecisiveness.

When asked if the system had changed her thinking, she responded, "No, ISVD only made my thinking stronger."

CASE STUDENT NO. 3

Student C, Boy

Regular Schedule for Session

9:21 - 10:03, Wednesday

Use of the System

Number of Sessions: 5

Session I: April 30, Complete Session

Session II: May 7, Partial Session
Student Usage -- 22 minutes
Machine Down -- 18 minutes at end of the session

Session III: May 14, Complete Session, 9:20 - 10:00 A.M.

Session IV: May 21, Partial Session
Student Usage -- 28 minutes
Machine Down -- 12 minutes at the end

Session V: May 28, Complete Session

Scripts Accessed: ITS, ITC, OCC PREF, DATA, ITM, OFFICERS, HELPVARCOL, COLPREF, COLT, HELPNAMECOL

General Description

Student C was rather studious looking of average height (about 5 feet 6 inches), slender, and with dark curly hair. He dressed typically for his group, not extremely faddish or conservative. Though soft-spoken and on the quiet side, he was self-assured, poised, and rather individualistic. He seemed secure and comfortable when discussing his family. He was always interested in the system, but not overly enthusiastic; he never thought of coming in after school or at non-scheduled periods, but he did as he was supposed to and liked what he did. He was intrigued technically by the computer, with an intelligent curiosity about the system.

Expectations

The student said he did not know what to expect and thought he would be surprised. He conceptualized the system "as maybe being a mechanical guidance counselor with information."

SESSION I -- April 30

System Activity

Student went through the introductory material, and part of the Occupational Preference script; he had few questions and seemed to understand the commands.

Reactions

The student did not appear uneasy at all, and seemed to be in command of the system. His questions pertained to specific sections of the introductory material. He stated that the only difficult instructions dealt with the opening section of the Occupational Preference script, which pertained to language interpretation.

Impressions

According to the student, the system was "easy to understand and fun to play with." Student C seemed relaxed and approached the session with a light and easy attitude. He concluded that the system could be a great help and looked forward to the next session. Of all the inquirers, he seemed most successful in grasping the way jobs were eliminated. This might have been partly due to his lack of tension, permitting him to be more objective without emotional involvement.

SESSION II -- May 7

System Activity

The review of introductory scripts was brief. The student selected to see information about the military. He inquired about ROTC and enlisted men's pay scales, and made a hard copy of the latter. He used the commands effectively and without hesitation.

Reactions

The student wanted specific information and felt comfortable about using the commands to access the information he wanted. He was quite

satisfied with the results and self-confident about his actions. He was somewhat disappointed when the machine did not function for the last 18 minutes, but he was not particularly disturbed by it.

Impressions

The student seemed to be enjoying the system. He operated the equipment well, and was pleased with his success. He said, "It's good; it's helping me a lot. It is giving me information that I want to know about." He felt the enlisted men's pay scales were the most helpful. He had one suggestion for improving the system. There should be send block commands for sections of the material where options are not listed below, such as one line sentences, etc.

SESSION III -- May 14

System Activity

This was an atypical test situation because there were three observers present throughout the session, and two Sanders technicians for a five-minute period.

The student went through the introductory material, with a few typing errors, and then requested information about Navy officers and NROTC. He queried the officers script for all relevant information, being particularly interested in general information about Navy ROTC and Navy promotion paths.

Reactions

The student was obviously nervous because of the three observers and the distractions of the technicians. Although he previously had no problems, he forgot to shift for his password, made typing errors, and typed wrong answers to instructions, as, for example, he typed out entire sentences instead of numbers or letters. He was disappointed that he had to go through all the military introductory material when he specifically wanted information about ROTC. When he finally got the officers' pay scale and a list of schools offering Navy ROTC, he made hard copies of both.

Impressions

The distractions of other people present influence the student's activities during this session. Although he was not at ease and did not perform as usual, he did very well considering the circumstances. In spite of many mechanical errors on his part, which kept the session from being as successful as previous times, he said "I feel that I had more control." He was frustrated, though, by the inability to get to the information he sought. He felt the system was not direct enough, as he had to go through much material before he could reach the point he intended to reach immediately. He said, "I think a counselor would be better in certain areas, but he wouldn't have all of the information as the computer; but I did get the information I wanted."

SESSION IV -- May 21

System Activity

As he had done each time, the student came in with a plan in mind. This session he intended to find out about Harvard and other colleges, so he went to the DATA script. Because of problems with the system, he had difficulty getting information about first year course requirements at Harvard University. He was distressed at the repeated computer responses, "The machine does not understand your answer." He did get a hard copy of variables for the college data base.

Reactions

This time the student had some difficulty communicating with the system. The HelpVarCol and Data scripts posed language difficulties. He felt that several instruction sections were ambiguous. At one point, he asked if he should type a number or the word "cost" and when told he should decide, he took a coin from his pocket, flipped it, and typed the number. When blank template sentences appeared in the College Template script, he remarked, "The machine has gone batty."

Impressions

The student encountered more frustrations in accessing the information than in prior sessions. He still reacted by being baffled and curious at what was happening rather than feeling anger or frustration. His summary of the day was, "The computer is rather a temperamental old fool. Actually it was pretty good, although I was baffled about information about Harvard . . . not deep enough; for programs of study, there was no information about courses." When asked whether he had control over the computer, or vice versa, he said, "Not today! It had a mind of its own." This referred particularly to the numerous "not understand" messages that he had seen.

In addition to the suggestion to provide a greater depth of information, student C suggested "cutting down long directions" as another way to improve the system.

He felt the instructions in the HelpVarCol and Data scripts were difficult. When he came across ambiguities or when his input sentences were not recognized, the student wanted to know exactly how much the computer was able to understand. This seemed to reflect his serious interest in the system's capacities and potential.

SESSION V -- May 28

System Activity

The College Preference and College Template scripts were the student's major source of interaction with the system. The HelpNameCol script was accessed for a short period of time.

The student was not as precise in his predefined goals as in other sessions. He asked what the computer could do besides what was listed in the commands. He decided that he would like a list of colleges. When he got into the College Preference script, he eliminated all schools on the first round because the option "freshman standing" did not function. He remarked, "How could that have happened? . . . I had 376 colleges." After he got a list of the first 10 of 132 colleges, he wanted specific information about

a particular school and then encountered system's problems in the form of looping and script input errors. In the HelpNameCol script, he indicated that he wanted a listing of the schools from the preference script and was informed that he hadn't taken the script before, at which point he asked the supervisor, "Didn't I take it before?" He went back to the preference script and got his list of colleges down to nine schools, but the list failed to appear.

The student did not make a hard copy of the first 10 of 132 colleges.

Reactions

Generally perturbed seems to best describe the student's reaction this time. Several times a quizzical look appeared on his face, as he was unsure whether he had "flubbed", as he put it, or whether the machine was acting strange. "It strikes me like it's nuts!" When asked what he meant, he said, "Jumping off into totally unrelated topics from what you are working with."

Impressions

The supervisor agreed with the student's evaluation that the computer was a bit crazy that day; looping, sporadic skipping, and unexplained responses kept occurring. This session the student's answer to the query, "Who was in control?" was "Half and half." System and script errors surprised him. He was unsure whether he had erred or whether the computer was unreliable. Several times he shook his head when he looped into the wrong scripts or was unable to get information.

The reacted good-naturedly, as if a friend he had found fairly reliable in the past, had gone crazy for a day. One time, with a smile on his face, he raised his hand as if to strike the console. When asked about the value of the system, he said he still felt that it was a good idea. "If it could have pulled up the nine colleges, it would have been very good." His suggestion that "There should be uncomplicated, simple directions for the computer. Once it gets off and is not working, there should be simpler things than typing 1234567890@HELP." But he commented that the instructions were easy to understand.

The student operated the system well, with quiet competence. He made good use of the commands. He had some difficulty understanding how to

phrase his requests properly so that the computer would understand his input.

General Discussion

Of all the students in the field test, this boy was most relaxed and comfortable with the computer and with the various problems that arose. His sense of humor was maintained throughout, which kept him from reacting in anger or frustration. This unruffled tolerance allowed him to concentrate on grasping the complexity of the material and the methods available to proceed through the system. He went farther than any other student in the scripts and in generally understanding how to progress through to the information he wanted. When he made typing errors, he smiled, and tried again; when the system looped or failed, he smiled and tried again. This quiet acceptance of problems persisted throughout -- even in the final session when the machine was particularly uncooperative, giving him incorrect responses and switching him from topic to topic.

When he was asked how he felt about the open-ended question in the Orient I script, "What do you want to do today?" the student said it was no problem for him, because he always thought in advance about what he planned to do. He came to each session prepared with specific suggestions. This reflected his conscientiousness; he took the project seriously, and approached it in his well organized fashion. It also seemed consistent with his general behavior pattern, which was self-confident in his poise and maturity. Both in his autobiography and in conversation, he indicated solid family relationships -- certain qualities were appreciated in his father, such as activity, sports, technical skills, and others is his mother, her personable, warm human relations. He emulated these admired values from both parents.

His leaning toward the medical profession seemed stimulated by unpressured, thoughtful consideration of the field and the challenge it offered. This was also notably affected by the belief that some field of medicine would enable him to make a needed contribution to society, ". . . a needed skill in the world today. Besides I like to help people when I can." The importance of his sports and outdoor interestes appeared to be his other side, and quite naturally relegated to an avocational role. These interests never entered the picture as options for jobs, but were a high priority in his personal description. This presented no conflict,

as he obviously saw how his father, who is a physician, managed to have both ways of life fit into a pleasant pattern.

His intellectual curiosity was evidenced both in his self-appraisal, when he commented on his many interests, and in his approach to this project. Perhaps because he was able to restrain his emotional involvement, he was more perceptive of the purposes and intricasies of the system. At one point, when inquiring about colleges, he asked if there was data about him in the computer. He wondered if test scores or personal characteristics were matched to colleges in any way.

Altogether, it was an interesting interlude for this student. He felt he gained some concrete information, and was exposed to an intriguing concept. He accepted it as one of life's enriching experiences.

CASE STUDY NO. 4

Student D, Boy

Regular Schedule for Session

10:05 - 10:47, Tuesday

Use of the System

Number of Sessions: 4

Session I: April 29, Partial Session
Machine down at the beginning of session

Session II: May 5, Partial Session
Student Usage -- 20 minutes
Student came as a substitute for another inquirer.

Session III: May 20, Partial Session
Student Usage -- 30 minutes
Machine Down -- 10 minutes, two intervals of machine failure during session

Session IV: May 27, Complete Session

Scripts Accessed: ITS, ITC, NEWTON10TEMPLATE, NEWTON11DA, ORIENT I, DATA, OCCTEMPLATE, OCC PREF

General Description

Student D was tall, about 5 feet 7 inches, slender, with neat hair and clothing, and dressed typically for his age. He was physically mature, and though not always clean-shaven, never unkempt looking. He was prompt, polite, and cooperative. He seemed like a stable person, one who knew his own capabilities and interests. His job after school as an auto mechanic was more enjoyable than his classwork. He liked to work with his hands and was interested in anything to do with engines and mechanics. He knew that he was not a good reader and was sensitive about his reading ability. He rarely asked questions, and when the supervisor inquired as to whether he needed assistance, he would not say, "I don't understand", but would hesitate and attempt to do the section without admitting that he had failed to comprehend. His greatest interest in the computer was in the mechanics of the machine itself. He was very curious about the working of the computer.

Expectations

The student said he had no idea what to expect. He would have to see more of the system to know about it.

SESSION I -- April 29

System Activity

The student asked few questions, but there were long pauses when he did not act, so the supervisor interjected comments to see if he understood. He pushed send block before he finished reading the text, and needed some instructions interpreted. He misspelled several words, and typed his birth date instead of his age.

Reactions

This student stated right away that he was not a good reader. He seemed to try the text, and then would push send block before he finished, perhaps because he assumed he would not understand the rest of the text.

Impressions

His comments on the system were, "I like it. The instructions aren't too hard. Smarter kids wouldn't have too much trouble." He seemed somewhat apologetic for his own limitations in reading and spelling. Otherwise, he was implying that the instructions were good, but he was inadequate to understand them thoroughly.

SESSION II -- May 5

System Activity

The student accessed the tenth and eleventh grade Newton High School information.

Reactions

Both the Newton 10th and 11th grade templates had sections that were difficult for the student to read. He did not ask questions, but only admitted that he did not understand the text when the supervisor prompted him.

Impressions

Because student D was substituting for an absentee inquirer, he had to use the supervisor's identification number. Since he had only 20 minutes on the system, he was instructed by the supervisor to assist in debugging the Newton scripts.

The student tried to be very cooperative. He operated the machine well. He commented again that he was not a good reader and that he was sure good readers would not have problems with the system.

SESSION III -- May 20

System Activity

After the introductory material, the student wanted to find out information about a mechanic. He was hesitant about using the commands, but finally started the Data-Job script when the machine went down. After another try, the machine went down again, so he never got very far.

Reactions

With the machine failing twice, the student was frustrated in his attempts to get specific information about a mechanic. His reactions were annoyance, but not anger. He made many errors himself, for example, in the introductory script, when it asks "Do you know the commands?", he typed "No, I know the commands." because he thought it said "Do you want to see the commands?" His misreadings and misspellings delayed him several times. After both machine failures, he had to go through the introduction again, which confused him somewhat.

Impressions

This interrupted session was not very satisfying for the student. "I'm so fed up with the beast because it's breaking down every time I come in. If the beast is working I might get some help." He also commented, "It only works when I am here other than when I am supposed to." This referred to the previous session when he was a substitute.

He made several other observations. He asked, "What is the sense of the slides?" He was unhappy about starting all over again after the machine had been down. He also wanted to know why you could not see the password, which indicates that perhaps he had not read or understood the CRT message about the password being invisible. He had some trouble finding some of the letters and symbols on the keyboard. When asked whether he felt he had control over the computer, he answered, "No, the computer is in control. It breaks down a lot." Often the student would read a section and not respond until the supervisor would make a suggestion or clarify what she thought might be the point in contention. He summarized the session in these words, "I'm getting more used to it now. Instructions are easier to understand. It's clear. I have a hard time reading. It probably takes longer for me to read the instructions than other people."

SESSION IV -- May 27

System Activity

A technician from Sanders was present throughout the session.

The student again tried to get information about a mechanic, but was unsuccessful because of system's problems in recognizing his input, and his own typing and spelling errors. He spent the latter part of the session in taking the Occupational Preference script twice, but did not receive a job list.

Reactions

When the student saw the question, "What do you want to do today?" he said "I'm always faced with that question . . . I know what I'm going to do now." He set out to get information about a mechanic since "I never got there last time." In requesting the information, he left symbols out of the commands and needed assistance in spelling 'mechanic'. When he correctly inputted the title, it was not recognized by the system. The system then looped into another script, at which point the supervisor executed the Occupational Template script. Several alternate titles (television

and radio repair, repairman, technician) were inputted, but again, not recognized. After the system looped, the student accessed the Occupational Preference script, which proved to be more successful. He never displayed much annoyance, but persisted patiently.

Impressions

He summarized the session in this way, "Well, it didn't break down for the whole period." But he added later, "Seems to be getting harder and harder to get information out . . . Don't know what jobs they have . . . You name a topic, it can't pull it out . . . It isn't balanced right." He didn't feel he had received any real help. The student never lost his calm cooperative attitude. He accepted correction and repeated his input many times, with polite good will. He seemed almost glad that the computer was making mistakes, too, and was quite pleased to be asked for suggestions to improve the system. He complained about the "beast's" shortcomings in a rather assured way, seemingly because he rarely has the opportunity to have his judgment valued. Also, perhaps his familiarity with machinery, made him more understanding of mechanical problems.

General Discussion

In the student's autobiography, he uses two words, "obedient" and "nice" to describe himself. These were both accurate. He was always courteous and polite, and cooperated in every way he could. When he was frustrated in his attempts to get information, he was perturbed but never roused into losing his temper. His reading difficulty was of long standing at school, and though he repeated several times that he was not a good reader, and I'm a lousy speller", he was almost embarrassed about it. He never said he did not understand, but would go ahead and try something to avoid admitting that he had not read or comprehended the instructions. One had the feeling he had built up many mechanisms over the years at school to avoid letting anyone know that he was not reading the material. Initially, he seemed to blame errors on his own failure, but as it became apparent that the machine sometimes was at fault too, he seemed to feel more companionable with it, calling it the "beast" and complaining about it in almost a teasing way, as his fellow traveler along the path of mistakes. The supervisor told him several times that she wanted his opinions about the system and his suggestions for improving it. She explained that this was just a test situation to find out how all kinds of students reacted to the system, and if he found the material difficult to understand or not clear enough, this was very important in helping them improve the system for other students. He seemed finally to feel flattered that his evaluation was important, and almost enjoyed analyzing the problems he had encountered.

He was very much interested in the computer itself, and watched the technician intently when he came in during the last session to change a transistorized board. He looked inside the black box to see how the components worked, and asked how the messages were sent and received.

He preferred being involved with cars and engines and felt that he could get a full-time job as an auto mechanic since he already was working on a part-time basis as a mechanic, and, in his opinion, fairly good at this type of work. He didn't find vocational direction to be a problem. He was interested in finding out about the job of an auto mechanic, but he was not pressured or indecisive, so he had no real problems with which to confront the system.

His sessions were an experience that aroused his curiosity technically, but he never got far enough along to get personally involved. He managed the operation of the equipment well, touch-typing at all times, but his reading limitation definitely hampered his success.

CASE STUDY NO. 5

Student E, Boy

Regular Schedule for Session

10:05 - 10:47, Wednesday

Use of the System

Number of Sessions: 3

Session I: April 30, Partial Session
Machine down at the beginning of session

Session II: May 7, Complete Session

Session III: May 21, Partial Session
Student Usage -- 25 minutes
Machine Down -- 20 minutes, at beginning and then at the end of the session

Scripts Accessed: ITS, ITC, OCC TEMP, OCC PREF

General Description

Student E was a tall, dark haired, physically mature looking ninth grade boy, of medium build, who approached the initial session with assurance. He was not really interested in the system as an experience, but expected it to function as an immediate aid. He appeared preoccupied, and rather in a hurry. There was little conversation or 'small talk'; he seemed to be searching for the potential of the system so he could get at the information without any delay. Though never hostile, he was somewhat tense and anxious, and any delay was intolerable.

He stated in his autobiography that he would like to be an electrician with his own contracting company. He was very analytic in stating his values and goals, and seemed to be at a stage of questioning these definitions. All of his reactions were bold and emotional. When asked, for instance, what he wanted to do on the computer, he threw his arms in the air, "How do I know what I want to do?"

Expectations

This student said, "Don't know, no idea."

SESSION I -- April 30

System Activity

The student went through the introductory material.

Reactions

Student seemed to understand the instructions, but several times needed reassurance about the use of send block, asking "Now shall I send?" He found the hard copy section to be ambiguous. He did not appear to have a reading problem, but was hesitant in carrying out instructions.

Impressions

"It was interesting but just a machine." was the student's reaction when the session was over. He was very much interested in how the equipment operates. He also questioned whether he would have to go through all the introductory material again next time. This seemed to indicate an interest in what would come next, and an anticipation about exploring the system further.

SESSION II -- May 7

System Activity

The student went through the introductory material and accessed the Occupational Preference script. He received this job list:

arc welder, electrician, auto mechanic, dental-lab technician, paperhanger, diesal mechanic, compositor, photoengraving printer, stereotyper, process artist, stripper apprentice, watchmaker.

He used the Occupational Template to get a description of an electrician, and made hard copies of both his list and the description. The student received a great deal of direct help from the supervisor.

Reactions

In the introductory material, the student needed reassurance about several points, and kept indicating that he felt the instructions were not

direct enough. He needed to be reminded to type the symbols that make the password invisible, and also to push send block after text. He made an error in answering the question, "Do you remember the instructions or do you wish to review?"

Impressions

This student seemed very uncomfortable with the open-ended situation, and strongly urged a more structured format. His frustration level was so low that the supervisor gave him much more assistance than she gave other students. He recommended that the supervisor should tell the students what to say, and generally be far more directive. "How does a student know?" he asked. Although he understood most of the material, he commented that the information should be more to the point. He suggested that hard copies should be made of everything a student does. He made copies of both his list and job description, and felt that the information was useful. He said he did not want to take the Occupational Preference script again, since he was satisfied with the list that he had received.

SESSION III -- May 21

System Activity

The student had difficulty avoiding repetition of the introductory section because he responded "yes" to the review option. He wanted to return to the template description of an electrician rather than accessing the Occupational Preference script. However, he proceeded to type "yes" when the system asked if he wanted the script. The supervisor intervened, and the student went on to the Occupational Template. He only got as far as the first part of the template when the machine failed, and it was down for the rest of the period.

Reactions

The student got so annoyed that he typed in wrong answers. He lost his ID and password, so he needed to borrow an extra copy. He asked

when to shift to get symbols, and he needed assistance with the slide projector question. The projector came on before he pushed the run button, which caused him to remark, "This is weird." When in the Occupational Template script, the system looped and he returned to Orient I, he commented, "The computer is mixed up." Though the session was full of minor problems, he remained very much interested.

Impressions

Because the student had been so impatient in the past, he was given direct assistance. The student suggested that the supervisor ". . . should type the number so that I'm ready to go when I come in. Then you shouldn't have it for just one period. When you get it straightened out, it's time to go." He reiterated that more direction was needed. In spite of his receiving more help than most students, he wanted more and seemed to indicate that the computer should be in control, and the student required to do very little. When asked about the question "What do you want to do today?", his response was, "I don't know. How am I to know? It leaves you blank and then you have to start thinking."

He also suggested that it would be good to hear a person's voice rather than to constantly read material on the screen. He commented again on his dislike for repeating all the introductory material. His overall feeling about the system was expressed in this comment: "It would be a good idea if it would work. It would help a lot of kids. Right now it's a mess." When asked to explain further, he restated his desire for more direction, and a highly structured interaction. During this session, the student appeared more calm and less impatient. His interest in the system was still high.

General Discussion

This student reacted strongly to the open-ended nature of the system. He seemed to be searching for the precise limitations of the information, so that he could be more directed from outside, and less left to his own inclinations. He continually asked what to do, and resented having the role of active leader given back to him. He wanted the system to take the lead, and simply give him choices from a concrete list of choices, so that he could receive information. He seemed to understand the material instructions. He could not cope with ambiguity.

The guidance counselor indicated that the student had some emotional problems. He discussed his high school plans briefly, saying he did not want to go to the Newton Technical School because "the kids there goof off, and there are some troublemakers." He spoke of his older friends, and his 'experience' and gave the supervisor the feeling that he was on the borderline of picking his role in life. He had already been in some trouble, and felt his immediate future would decide for him whether he would end up a 'trouble-maker' or not. He was well aware of the possibilities and also of the contradictions in his behavior. He discusses this in his autobiography, and observes that he is completely opposite from his parents and brother, and maybe his friends have influenced him. His impatience may have been caused by his anxiety, and the discontinuities of his life at that time. The vocational decisions were a part of the problem, but not too important to him. He planned further schooling, so the vocational choice was not imminent.

This type of system did not seem satisfying to student E, and he consistently demanded more structure and direction. He wanted to be told what to say, and was not interested in exploratory action. He wanted information, and answers without delay. He did possibly get some vocational help in the information he received, but the experience with the system was not a fulfilling one for him.

CASE STUDY NO. 6

Student F, Girl

Regular Schedule for Session

10:03 - 10:47, Friday

Use of the System

Number of Sessions: 4

Session I: May 2, Partial Session
Student Usage -- 15 minutes
Machine Down -- 25 minutes

Session II: May 9, Complete Session

Session III: May 16, Complete Session

Session IV: May 23, Partial Session
Student Usage -- 33 minutes
Fire Drill -- 7 minutes in the middle

Scripts Accessed: ITS, ITC. COL O, COL PREF, COL TEMP, DATA, ORIENT I, OCC PREF, SUMMARY

General Description

Student F was of average height, slender, soft spoken, and quiet. In conversation, she needed to be drawn out as she was not naturally outgoing. When commenting, however, she often had some perceptive thoughts. She did not appear to be tense or nervous, but talked easily after her initial shyness. She was always attentive and interested, though not one who got excited in her enthusiasm.

She was a dependable, sensible, realistic girl who was a loyal friend. She fit well into a group, conforming in dress and manner, although not to be generally singled out as a leader. She indicated a comfortable relationship within her large family.

She approached the computer with curiosity and interest. In her quiet way, she enjoyed the sessions and sincerely tried to get some educational guidance.

Expectations

The student had no idea what to expect from the system.

SESSION I -- May 2

System Activity

The machine was not functioning for the first 25 minutes of the session. When the student finally got on the system, she was only able to access the first part of the introductory material before her time was up.

Reactions

This was a very short session. The student had only slight exposure to the system. When she was in the introductory material she made praying gestures when the screen did not clear immediately.

Impressions

This student was not as enthusiastic as she might have been, because the system was down for so much of the period. She was well motivated though, and came in after school to see how it was. She remarked that she would like the system if it was good to her.

SESSION II -- May 9

System Activity

Student F handled the introductory material very hesitantly. Upon its completion, she accessed the College Preference script, receiving the following list of schools, of which she made a hard copy: Pembroke, Goucher, Hobart, Union, and Chatham. She then selected to see further information about Pembroke College.

Reactions

The student was full of minor questions pertaining to the details of the instructions. For example, she asked, "Should I type 'review' if I want to 'review'? She needed reassurance about when to push send block and had difficulty with the commands. In the College Preference script, she didn't follow the instructions carefully and forgot what to do when the

first question appeared on the screen. After a long pause, the supervisor explained the instructions and reminded her about the importance of reading carefully.

She was intrigued by the teletype. Upon seeing the phrase, "Let's begin", on the screen, she repeated it aloud.

Impressions

In the introductory material, in spite of her hesitancy, the student commented that she was getting further along than she had in her prior session. Her initial response to the question, "What do you want to do today?" was "I don't know." After she decided to explore the area of college choice, her input had to be typed several times since it was not being recognized by the system. Mrs. Kunberger, head counselor at Bigelow, was present during the session, and gave the student some help by suggesting various words and phrases that might work. At this point, the student was not quite as personally in control of the system.

At the end of the session, student F stated that she liked the system because she go her list. "It was helpful as I would not even know about the schools to attend." It was obviously a successful interaction; she looked forward to her next session.

SESSION III -- May 16

System Activity

The student pursued college information, but did not persist with any topic for any length of time. She started by requesting general information about Pembroke and Goucher. She did not make a hardcopy of the Pembroke information.

Reactions

The student had difficulty phrasing her input and kept changing her mind about what she wanted to do. Initially she indicated that she wanted general information about college courses, but then switched to the topic of scholarships. After she got a list of the types of scholarships available,

she decided not to continue, but to seek information about the colleges she had selected at her last session.

Impressions

Student F arrived with no real ideas about what she wanted to do. She required more assistance because she was so undecided, as indicated by the response, "I don't know" to the question, "What do you want to do today?" The supervisor gave explanations of the directions and text, helped when the system did not recognize the student's direction. When the student did become more specific in her requests, her interests did not persist beyond very general descriptions. She asked about college courses, but did not choose "program" for an option when she had that choice, seemingly because she did not realize the connection between "course" and "program". Her ambivalence in goals for the day could be seen in her directions to the computer and by the fact that she did not pursue the topic after system loops were straightened. She did get some general information about college selection and specific data for Pembroke and Goucher. She seemed pleased when it appeared.

"I learned a lot about things that I didn't know before about schools" was her response when asked if the session had helped her. She felt she had control of the system and liked her experience. She suggested that the system should include more information, "Lots of things I was interested in, but there wasn't information about these things." She was referring specially to the "no information available" statements that appeared in the College Template script. Although she felt she wanted more information, yet in her diletante approach, she always moved on to another area, after reading very superficial information.

SESSION IV -- May 23

System Activity

There were some script errors and keyboard and machine problems during the session. Input was not recognized at times, and there was some

looping. The student needed some assistance from the supervisor as she still seemed unfamiliar with some of the terminology, questioning certain terms. She first wanted information about Union College, but since her input was not recognized, she accessed the Occupational Preference script. She received a job list of 58 titles, the following 12 constituting the first list, of which she made a hardcopy:

> industrial designer, college faculty member, secondary school teacher, elementary school teacher, clergyman, branch manager, case worker, systems engineer, lawyer, judge, librarian, economist.

Reactions

The student was still hesitant with the commands and the phrasing of her input, and this was increased when the computer failed to recognize even her correct requests. She was distrubed by repeated "not understand" messages from the console, and remarked at one point, "This is stupid. He certainly isn't cooperating."

She received direct assistance from the supervisor when the system did not respond to the input. She asked for explanations of the text. For example, in the Occupational Preference script, one option of a question pertained to "working with hands -- visual and artistic ability." She asked for its definition and was told to try the @HELP command, but then no hint was provided by the machine. The student was generally frustrated during the period.

Impressions

At the beginning of the session, the student wanted to start where she had left off before, accessing specific college information, and was very disappointed when she had to repeat the material again. She could not get the computer to remember her list of colleges either. She was persistantly very personally involved with the machine, and her interest remained high, though she seemed disillusioned by her "friend's" shortcomings. Due to problems with the system, some of here responses were not recognized, so the supervisor gave her quite a bit of help, executing one script and suggesting input to be typed. The student was more dependent on the supervisor for assistance.

She evaluated the system as being "Very uncooperative. It's too confusing. It's confusing to me and the machine when it doesn't understand me and I don't understand it. Make the computer understand . . . You can use it sometimes. Half of the time, it goes crazy." She felt that the computer was in control this time. During the session, the supervisor tried to humor her about the situation when she noticed her annoyance.

When asked what she thought about the "What do you want to do today?" question, she remarked, "It's not that good a question. You say to yourself 'I don't know'. Put more into the question so that you know what to do." She thought that a list of possibilities should follow so that you would know better what to do. She also suggested that the student be given the option of returning to where he left off at the end of his last session. She inquired about how long the computer would be at the school. After being told, she commented that since it would be here for just two more weeks ". . . it had better help us."

General Discussion

This student was enthusiastic about the system in her quiet way, and quite impressed with its potential. Though she did not get too far in the script complex, and had mechanical problems and frustrations, she seemed to feel it could be of great value in the future to students who had problems.

In the second autobiography, she answered the question, "Is there a change in your job choice? If so, why?" by stating ". . . we would get them to choose their future and why it would be important." Though it's unclear, she indicated that working with the computer exposed her to many new approaches and possibilities when thinking in terms of vocational guidance. Application of this new technique to children with problems, or emotionally disturbed children, would make an appealing career. This shift in career thinking, from her former interest in the Peace Corps, seemed to have been stimulated by the exposure to this project. Her central desire to help children, however, had not changed.

The student was very attentive and thoughtful throughout her sessions. At times she was very frustrated by mechanical problems, but she seemed able to cope with these feelings without too much hostility toward the project. Because she was indecisive, she was consistently anxious for specific information. She wanted to explore the possibilities of the system, and her persistant suggestion was for more direction. She wanted to know the limits within which to search, with the system spelling out for her more directly what there was to do. She never learned to operate the system very well, and remained hesitant and prone to error in her input and use of commands. She seemed to be rather a dependent sort of person who would prefer to be directed, than rely on her own initiative. She was very perceptive about the situation, aware of her own difficulties, and realistic about the system's advantages and disadvantages as she had experienced them. She received some real help with the college list, and from a new awareness of the options available in making choices. The idea that so many factors influenced one's decisions was a revelation to her.

She had a social awareness and a degree of maturity, as evidenced both in her self-appraisal and behavior. She wanted to help people, and

she conceived of the system as a tool which had helped her, and therefore a potential aid in "helping people." The experience of working with the system, was a good one for her, opening new paths vocationally and revealing a more realistic framework for decision-making.

CASE STUDY NO. 7

Student G, Girl

Regular Schedule for Session

1:02 - 1:45, Wednesday

Use of the System

Number of Sessions: 4

Session I: April 30, Partial Session
Machine Down -- end of session

Session II: May 7, Complete Session

Session III: May 21, Partial Session
Student Usage -- 35 minutes
Machine Down -- 5 minutes

Session IV: May 28, Complete Session

Scripts Accessed: ITS, ITC, COL PREF, ORIENT I, DATA, HELPNAMECOL, COL TEMPLATE, DATAJOB, OMINOR

General Description

Student G had light brown hair, wore braces on her teeth, and was of average height (about 5 feet 4 inches). She dressed very casually, in blue jeans, with her shirt tail out, and in sneakers. It was sometimes difficult to tell whether she was somewhat lethargic, very relaxed, or just tired. Occasionally she worked after school as a waitress, which accounted for her being rather sleepy during one session. She was a warm personable girl who related easily to the supervisor. She was less excited or impressed by the computer than other inquirers. She took her time, and approached the session according to her mood, sometimes dilligently, sometimes not really caring much one way or another. The one think that really intrigued her, was the supervisor's notebook. She repeatedly asked about the notes, what they said and what was being written about her.

Expectations

Her response was "Don't know" and a shrug of the shoulders.

SESSION I -- April 30

System Activity

Student G went through the introductory material and then the machine stopped functioning.

Reactions

She had no major problems regarding the instructions. There was some hesitancy about the send block button, and a few questions about correcting errors, commands, and the location of symbols.

Impressions

This student was not overwhelmed by the idea of using a computer. She was just not too excited or nervous, but took the experience quite casually. She was interested, and said it was "challenging."

SESSION II -- May 7

System Activity

The student reviewed the introductory material and then accessed the College Preference script, but did not get the college list or the specific information she wanted.

Reactions

The student found the instructions and vocabulary of the introductory material to be generally easy to understand, although there were some ambiguous statements. She was confused by the instructions pertaining to the slide projector, and needed reassurance in using send block. She did not have any real problems, though, with the system.

Impressions

She felt that the session was not helpful because she did not receive a college list. She stated, "The machine isn't working as well as it should, a student should be on more frequently as you have to wait a

week for the college list." The student occasionally needed some clarification with the instructions, but was disappointed only because she did not get a list of schools. When the screen was slow in returning a message, she intimated that the system would crash because she and the machine were incompatible.

SESSION III -- May 21

System Activity

The student successfully reviewed the introductory materials and the, after some looping, went through the entire College Template, using Boston University for her description.

Reactions

The student wanted to find out information about Boston University. She executed the commands with some assistance from the supervisor. Throughout the scripts, she had difficulty with the instructions, either because she scanned the material quickly, expecting an interpretation from the supervisor, or because the directions were unclear, as in the HELPNAMECOL and DATA scripts. She made some errors that caused the system to loop, but then once in the template script, had little difficulty.

Impressions

When the question, "What do you want to do today?" appeared on the screen, the student remarked, "I don't know -- got it last week, too." Although, judging from this remark, she appeared to be confused, she in fact did know what she wanted from the system. Because she liked to take her time, she was a bit slow in responding on the console. She was not nervous or tense during the session. Though warm and friendly, student G did not have much to say. If asked by the supervisor to elaborate further about a comment, she would shrug her shoulders and say something to the effect that she didn't know. She had difficulty with the HELPNAMECOL and DATA scripts, but was not upset when she ran into problems. She got a hardcopy of all the Boston University information, saying it was for her mother; "She's a good woman."

Her impression of the system was, "Love working it . . . Don't have enough time." She felt she had control of the system during the session.

SESSION IV -- May 28

System Activity

The student wanted to begin where she had left off at the end of the last session, requesting information about extra-curricular activities at Boston University. With help, she found the correct command. When the DATA-COL script asked for the name of the college or its identification number, she questioned using the number since it had not been recognized the prior week. When the number was recognized, she remarked, "What do you know." She then decided not to request information about extra-curricular activities, switching to "scholarships and federal funds", of which she made a hardcopy. Then she tried to get information about a waitress, but was unsuccessful because she misspelled her first entry and the second typing was not recognized by the system. She then stopped and tried to access the Occupational Preference script.

Reactions

She had several questions pertaining to interpreting the information, finding symbols, and spelling her input. She had little patience with either her errors or the system's. She finally said, "I want to get a job list like Mrs. Hannen and others got." Neither the student nor the supervisor had any luck executing the Occupational Preference script. She became discouraged and typed @QUIT before her time was over.

Impressions

The student's impatience was a result of a number of fairly inconsequential problems. Her impression of the session was, "No comment . . . not happy with it." When asked why, she did not want to elaborate, other than to say she was not in a good mood, and "It's been one of those days."

The blanks in the template description were most annoying to her. After one difficult sentence, in which most of the information was missing, she remarked, "I'm not going to copy down anything else." She then pushed send block with a vengeance. Another sentence came back with some blank information, to which she stated, "Is this all they're giving us?" After the session, she decided not to take her hardcopy, but then changed her mind.

The student was leaning over the keyboard during the session, often resting her fingers on the keys, which inadvertently caused her to push keys by mistake. Because of the waitressing job, she had not had much sleep and was tired. It would seem logical that her impatience, carelessness, and general gloomy mood were caused by this lack of rest. Therefore, at certain points during the session, the supervisor assumed a directive role by executing scripts and telling her precisely what to type and when to respond to the system.

When the student first came into the room, she went to the supervisor's notebook and started thumbing through it. She was quite anxious to see what had been said, and throughout the session, repeatedly watched what was being written, rather than concentrating on the CRT. She was the most curious of the inquirers and persisted in asking about the notes.

General Discussion

The student came in several times after school to visit with the supervisor. Although she maintained an interest in the computer, personalizing it somewhat, the most plausible reason for her visits was the attachment she felt toward the supervisor. She liked to talk to her, and, on occasion, unburdened some of her problems. She often stayed after school to help teachers with chores, and seemed to enjoy the personal recognition or relationship that this allowed. She appeared to be an independent girl with a realistic outlook. She enjoyed her job as a waitress, and did not seem upset about her school or family situations. Her sporadic apathy and mood changes were mentioned in her autobiography, "I am one person who is a lot of things." She then proceeded to describe her contradictory qualities and moods. She indicated an attachment to her ninth grade English teacher whom she would like to emulate.

The experience with the system was fun for her, generally, but not too helpful. She received some information, but really did not seem ready for much guidance, if it had been available. She wanted to go to the Newton experimental high school. Her imminent future appeared to be laid out; she was not ready to consider further future steps. Although she was interested in information about Boston University, it was more to be filed away for 'sometime' or to be given to her mother, who would be interested.

CASE STUDY NO. 8

Student H, Boy

Regular Schedule for Session

9:21 - 10:03, Thursday

Use of the System

Number of Sessions: 5

Session I: May 1, Complete Session

Session II: May 8, Complete Session

Session III: May 15, Partial Session
Student Usage -- 30 minutes
Student was 10 minutes late because of a photography class

Session IV: May 22, Complete Session

Session V: June 5, Partial Session
Student Usage -- 15 minutes
Machine Down -- 25 minutes at beginning
[Substitute Session, as machine was down at his scheduled hour]

Scripts Accessed: ITS, ITC, OCC PREF, ISVD CAREER GAME, COL PREF, DATA, HELPVARMIL, COL TEMPLATE

General Description

This student was short, about 5 feet 1 inch, and slight, with light brown hair. He dressed normally for his peer group, conforming in manner and style. He was recommended as a subject, partially because the head guidance counselor felt he had some minor problems which some individual attention might ameliorate. He was somewhat mischievous, and occasionally an irritant in class. However, in the field test situation, he posed no problems, and related easily to the supervisor. He was perhaps the most successful of the inquirers in terms of the total number of minutes that the system functioned for each session. He performed well on the system. He approached the project with interest and enthusiasm, both for the technical aspects of a computer, and for the system itself. He did not come in after school for extra time, but he enjoyed the scheduled experiences, and remained very interested.

Expectations

The student said he really did not know what to expect. "I just see that big box with numbers and letters on the screen."

SESSION I -- May 1

System Activity

The student went through the introductory material and some of the Occupational Preference script.

Reactions

There were no problems. The student operated the system very well, asking few questions and needing very little reassurance or assistance. He commented that the instructions were "hard at first" until he got used to the way they were worded. He was somewhat puzzled by the directions in the first section of the Occupational Preference script which discussed selecting options.

Impressions

This student concentrated on the text and had no difficulty with the equipment. If the screen did not clear immediately, he would remark about it, but seemed very much involved with the information itself. He asked whether there was another person on the "other end". When the session was over, he commented, "It's great! I wish that I could work on it every day." On the whole, it was a good interaction, and he was very enthusiastic.

SESSION II -- May 8

System Activity

The student reviewed the introductory part, making a hardcopy of the commands. He then went through the Occupational Preferece script twice, and attempted to access the ISVD Career Game. The first time through the preference script, he did not receive a job list, but on the second trial, with some advice on how to limit choices in options, he received eleven job titles. He made a hardcopy of this list:

test reactor operator, housekeeper, yardman, metallurgist assistant, automobile salesman, detective, marine engineer, grinding-mill operator, correction man, tile shader, gun examiner.

Reactions

The student smiled when his name appeared on the screen. Throughout the session, he was intent on reading the material. The supervisor had to interpret "I feel my education would affect my job choice.", an option in the Occupational Preference script. He said he understood most things, but found some directions confusing. He again had no technical difficulty, and seemed to enjoy the session.

Impressions

The system, both scripts and equipment, functioned well, and the student made few errors. He seemed quite comfortable, and satisfied with the interaction. He was pleased to get the job list, but not excited, as some of the students have been with the concrete evidence of a list; he was gratified as much by the text, information, and smooth performance, as he was with the list. He definitely had command of the system. He said it "seems like a human not a machine."

SESSION III -- May 15

System Activity

The introductory material was reviewed briefly, and the student spent the rest of the period on the College Preference script. He received a list of two colleges, of which he made a hardcopy: University of California at Berkeley, and Wichita State University (Kansas).

Reactions

This time the student arrived late because he had been at a photography class. He also seemed tired. He said that since his mother was in the hospital, he had to fix his own breakfast. He had forgotten his ID and password card. While reviewing the introductory material, he mentioned that he had studied the commands at home. During the session, the student was somewhat preoccupied and distracted and made some careless errors, in his typing, and in following directions. He needed an explanation of what "financial aid" and "extracurricular" meant, and the supervisor had to retype one set of answers for him.

Impressions

For seemingly logical reasons (his mother's hospitalization), the student did not function as smoothly this session. He was impatient, for example, pushing send block before the information appeared, and making other response errors that he did not exhibit in previous sessions. He still operated the system very well, and was enthusiastic in his evaluation. "It's great. I actually got something on the first try." He felt he definitely had control of the system. And when questioned about the guidance help he had received, he said, "It was a lot of help. It kind of broadens out my life because I didn't think about as many things about a college. I found the two schools too."

SESSION IV -- May 22

System Activity

The student reviewed the introductory material quickly and then went into the College Preference script; after a few choices, he eliminated all colleges, so he started over again. On his second time through, he got a list of 7 schools:

University of California at Berkeley, Grinnell College (Iowa), Wichita State University (Kansas), Kalamazoo College (Michigan), Concordia College (Minnesota), Drury College (Missouri), Dana College (Nebraska).

After making a hardcopy of this list, he accessed the HelpVarMil script. He was on the verge of obtaining a list of military jobs when the session ended.

Reactions

The student again borrowed the ID and Password. He uses the one hand hunt and peck method of typing, but is careful. Several times he was impatient for the screen to clear and pushed send block twice to hurry it, and once commented, "I did it again. . . Takes long enough doesn't it?" In the College Preference script only 16 colleges remained after the first question, which prompted his statement, "I sure cut that down fast." He asked for a definition of "intramural athletics."

Impressions

Student H brought a friend in at the beginning of his session and proceeded to show his friend the "monster". He explained the different parts of the system, referring to the CRT as a "mini-monster". The student was tired during this session because he had stayed up while his cat was giving birth to kittens; he yawned throughout the period.

He asked if he could have a list of all 376 colleges in the system. He summed up the session as ". . . Great. More interesting today than ever before. Got the same two colleges as last time and five more." He also commented, "I controlled the computer."

When queried about the question, "What do you want to do today?" in Orient I, he said, "It bothers me. I think they should have a list and that you should choose from that list. Several weeks ago I picked the Game. The computer selected one for me and I didn't like that."

He again had a successful day. He used the commands well and without hesitation. He was very enthusiastic about his interaction.

SESSION V -- June 5

System Activity

The student accessed specific information about an attorney. Since it was a brief session, he did not get far.

Reactions

He came into the room and asked, "Is it working?" He borrowed the ID and password card and then typed "Find a job" in response to the "What do you want to do today?" question. After the first frame of the Occupational Preference script, he stopped and accessed the Data-Job script. He was somewhat hesitant and confused in the Data and Template scripts. The blank sentences and phrases in the job description were especially confusing and annoying. The supervisor attempted to fill in the missing information.

Impressions

The student's regular session was not available because the system was not functioning, so he was allowed this little block of time. It was not

a satisfactory session. The template sentences with the blanks were quite disillusioning. In summarizing, he commented, "Pretty skimpy -- really wasn't that much . . . enjoyed running the machine. The information was too minute and really not that much to get into." He explained that he had gotten the idea about becoming a lawyer from his uncle in California who is a defense attorney.

General Discussion

It is most interesting to note that student H who probably had the most successful experience with the ISVD, and who was particularly enthusiastic throughout the sessions, went to the final group interview with a very different set of reactions. He was quite critical of a number of aspects of the system, and said, for example, "It doesn't have enough information, it just doesn't. It needs a lot more information." He went on to enumerate examples -- vocational data should include street car drivers; there should be facts about the Boston schools, whether it's legal to use corporal punishment, etc. He seemed to be trying to say that the unusual and unexpected, were not available, and that people want the unusual because average information is easy to get. Perhaps having a personal, unique complaint gave this student a better role within the group, or perhaps, it was quite well-considered and sincere. Certainly from the individual sessions, the student seemed quite gratified with the computer technically, with the potential of the system, and with his own personal gain in information. He repeatedly described the period as "great . . ." and perceptively evaluated the information he had received. There were a few occasions when the specific information he sought, was not to be found. The brief last session was one such occasion.

He was one of a few students who noted that the idea of so many options going into the selections of colleges was a new "broadening" concept. He seemed quite serious when he asked if there was someone at the other end of the system, and said the computer seemed human. He introduced his friend to the "monster", and was deeply involved with the proceedings. He quickly mastered the idea and mechanical ability to interact successfully.

He was a personable, talkative boy, who had an easy but no dependent, relationship with the supervisor. He was casual, but concentrated on the text, and took the system quite seriously. He was the only student who ever mentioned studying the commands at home, in preparation for his session.

He was very much interested in jobs, although he was comfortable with the idea of a defense lawyer, and felt no pressure to make even that decision. He was more personally anxious about college information, though, again, it was not an imminent problem for him. His interest in lay seemed to be based on an uncle's descriptions and no personal values, interests, or

capabilities of his own, aside from the obvious quality of such a profession being an acceptable goal.

The experience of working on the system was definitely enjoyable, and the supervisor felt that the system had actually been of some value to the student. It opened new avenues of thought for future decision-making.

APPENDIX A

Bulletins, Letters, and Forms Used in the Bigelow Junior High School Field Test

ISVD Information Memorandum

Parent Permission Form

Example Session Notation Form

Thank You Letter to Test Participants

HARVARD UNIVERSITY

GRADUATE SCHOOL OF EDUCATION

220 Alewife Brook Parkway
Cambridge, Massachusetts 02138

Information System for
Vocational Decisions

M E M O R A N D U M

To: Bigelow Staff, Parents, and Participating Students

For the past several years, the Newton Public School System and the Harvard Graduate School of Education have been cooperating with the United States Office of Education on a computerized guidance project called the Information System for Vocational Decisions, or ISVD. This project is designed to help students learn to make reasonable choices in planning their educational and vocational careers. Beginning shortly, the system will be field tested in several locations, including Bigelow Junior High School.

You may be wondering what this project is all about. In using ISVD, students will be able to get information about Newton High School, jobs, colleges, and trade schools. They can obtain suggestions for possible job or school choices by stating preferences, such as, "I like working with things and being out of doors." If the student wishes, he may ask for information concerning job descriptions, courses needed for certain jobs, costs of schooling or training, possible colleges or institutes to attend, related jobs, and other information. Much of this material has been prepared by members of the Newton School System.

The ISVD system consists of a typewriter keyboard, a television screen, and a slide projector. When the student first uses the system, he is taught how it works, including the use of the equipment and special words which he can use to ask questions, to "change the subject," or to get additional explanations where he needs them. He can type in questions in English, and get printed information in English on the TV screen. At times, color slides accompany this information.

The field test will be limited to a group of approximately 16 ninth graders. These students will be selected from among those who were enrolled in the seventh and eighth grades at Bigelow, and for whom we we have educational information. We will be talking to them from time to time about career decisions, and what the ISVD has to do with these decisions.

We wish to thank you for your cooperation and interest.

Sincerely,

(Mrs.) Dorothy Kunberger
Guidance Counselor
Bigeloe Junior High School

Robert Frost, Principal
Bigelow Junior High School

Patricia Yee
ISVD

Sheila Leahy
ISVD

HARVARD UNIVERSITY
GRADUATE SCHOOL OF EDUCATION

220 Alewife Brook Parkway
Cambridge, Massachusetts 02138

Information System for
Vocational Decisions

Dear Mr. and Mrs. _____:

The attached materials describe the Information System for Vocational Decisions (ISVD) which will soon begin field testing at Bigelow Junior High School. Your son/daughter has indicated that he/she would like to take part in this project. In scheduling students for the field test, we shall attempt to keep to a minimum any interference with regular class attendance.

We hope that you will give your permission for your child to take part in this project. Please sign and return the bottom portion of this letter. If you have any questions about field testing, please feel free to contact Mrs. Dorothy Kunberger at Bigelow.

Thank you for your cooperation.

Sincerely,

Mrs. Dorothy Kunberger
Guidance Counselor, Bigelow Jr. High
Telephone No. 244-4067

Patricia Yee
Information System for Vocational Decisions
Harvard Graduate School of Education

Sheila Leahy
Information System for Vocational Decisions
Harvard Graduate School of Education

I (give, do not give) my permission for my child to participate in the ISVD field test program.

_____
Signature

_____
Date

EXAMPLE SESSION NOTATION FORM

(Name) _____

(Date) _____

Time On _____ Computer Down _____

1. What are your impressions of the System?

2. Who seemed to have most say in what was going on today?

3. How much help did you receive
   a. new job titles, schools;
   b. useful facts

4. How did today's session compare with the last session?

5. Who do you think of the question, "What do you want to do today?"

6. Scripts taken and time

7. Directions to System

(Name) _____

(Date) _____

8. Reaction to Instructions

9. Reaction to Information

10. Other

THANK YOU LETTER TO TEST PARTICIPANTS

19 June 1969

Dear David:

On behalf of the Information System for Vocational Decisions, we would like to thank you for participating in the field test. We appreciate the time and the effort that you have spent in giving us information about how our system relates to junior high school students. We hope that you have enjoyed your experience and have benefited from using the computer.

Happy summer!

Sincerely,

Patricia Yee
ISVD

Mrs. Dorothy Kunberger
Counselor

PY:DK/sjm

APPENDIX B

Questionnaire for Autobiographies

Autobiographies for the Eight Case Studies

QUESTIONNAIRE FOR AUTOBIOGRAPHIES

1. What kind of person are you?

2. How did you get to be that kind of person?

3. What kind of career do you think you will go into?

4. Why do you want to go into this career?

In June, following the field test, the same questionnaire was submitted with the addition of question 5.

5. Has there been any change in your choice of career, and if so, why?

FIRST AUTOBIOGRAPHY FOR STUDENT A

April 17, 1969

First of all, I think it is important to state that I am a white, American youth. I feel this has great bearing on the way I act and feel. I am a very vocal person and express my ideas very freely. Many times I am accused of talking too much. The reason, I believe, is that I have strong opinions about all the problems that confront our society today. I am not ready to stop arguing until I'm satisfied that everyone understands my view. I also hope that people will change to my idea, and if they do, I am satisfied. I feel that there are many reasons behind this. When I see a person starving, or an innocent child be murdered, I really get hot about it. I usually look at both sides of an issue and usually take one side. I never find myself in the middle of an argument. I do find myself contradicting myself with various arguments. I must admit that at times I feel very confused about the world situation. Another reason that I have formed strong ideas is the surroundings that I'm in, and of course my peers. I found most people agreeing with me on basic humanistic issues.

I feel that I would like to be a lawyer after finishing college. The challenge of pitting myself against another person's mind appeals to me greatly. I like debating strongly with other people. I believe that this goes back to the idea of having strong opinions. To be successful in our society is very important to me. Our society has placed certain values on me, which I find hard to grasp. I do not choose to state an opinion about the morality of these ideals, but we'll just follow them subconsciously.

SECOND AUTOBIOGRAPHY FOR STUDENT A

June 10, 1969

I'm a very sensitive, deep-thinking person. I always find myself thinking about a world problem or even a problem close to home. Basically I appear to be happy-go-lucky but in reality I spend most of my time thinking about myself. I seem to question everything around me. Sometimes I have even tried to answer the question, "Why shouldn't I commit suicide," and "Why do I live the way I do." I don't want the reader to think I'm a person who sits home and meditates all the time. I enjoy sports and I enjoy extra-curricular activities at school. I really have no idea as to how I became the person that I am. I am against many things in our society but I also strive to reach them. An example of this is materialism. I have picked up many beliefs from my parents, friends, and teachers. I find that all three tend to agree with me many times. I think that the fact that I am a white, American Jew has an influence on the way I act and feel.

I think that I would like to go into a social service field. I have thought about becoming a lawyer. I like the idea of pitting myself against someone else. I enjoy debating very much. I form strong opinions about most things and I like to fight for them. I think that I also like to help people alot. I like working with other people and exchanging opinions and ideas. Again I come back to the fact that I'm materialistic. I want to help other people but at the same time make a very nice living. This may also be the reason why I think about my future as much as I do.

There has been no change in my thinking since entering the program. If anything the system confirmed my beliefs as to a future.

FIRST AUTOBIOGRAPHY FOR STUDENT B

April 17, 1969

1. I don't know what kind of person I really am. I enjoy independence, especially of thought. I like being recognized as an individual. I don't enjoy too much pressure although I need a little pressure. I am probably vain. Matter of fact, I know I am. I enjoy looking good or as good as I can. I enjoy a good time and especially night life. I hate doing the same thing constantly. I always have to be doing something moving, energetic and constantly changing. I get bored very easily. I'm rather sure of myself but I think I'm basically shy except outwardly I'm very outgoing. I also think I'm a pretty strong person. I also enjoy money.
2. I don't know how I really became this way. I suppose it stems from the people I associate with. I've been brought up to fend for myself and to depend on no one but me. I've always been told that I can get what I want if I try. I get many of my independent ideas from talking to many people who could be classified as almost semi-hippies. I also try to stay away from clicky people and very conforming people because they bore me.
3. I want to go into a career that allows me miles and miles of freedom for creativity and change. I always want to be able to work out of doors. I would like to be active physically. Not lifting and pulling but sports like riding and skiing. I also want a career that provides a lot of money.
4. I don't know why I want to do these things except that's the way I am.

SECOND AUTOBIOGRAPHY FOR STUDENT B

June, 1969

1. I am a very active, energetic person. I hate sitting still and doing tedious things. I also hate repeating things and doing things that seem stupid to me. I am fairly independent. I also get upset about people who can't do things. I'm impatient.
2. By the people I've been with and by my mother who tried to bring me up to be dependent only on me. (except for clothes and shelter which are provided by my family)
3. I don't know only it has to be active; never boring; and a good salary.
4. Because I want to do what I like.
5. If you mean by the ISVD computer has there been any change in my thinking? No, ISVD only made my thinking stronger.

FIRST AUTOBIOGRAPHY FOR STUDENT C

April 17, 1969

I am a person who likes the outdoors and most sports, especially those connected with alot of physical action. I like working with other people and especially those who have a good wit. The ocean has always interested and to a certain extent so has school. Especially French now that I'm getting better marks in it. I kind of hate work but will do it if the pay is good. I'm kind of lazy, most especially in hot weather. I love cold water and have done alot (2 hrs.) of swimming in it when it was at a temp. of 56 or less degrees. However, I like most water sports and I especially like hockey and soccer. I think most of this came from the way I was brought up. We had a summer home at Scituate where I grew to like the ocean and was introduced to soccer. And through various friends of my father I was introduced to hockey and play whenever I can. I've always liked history and a subject in school. I think its because the way people lived always interested me and the hardness of getting a living, carving it out of a wilderness or traveling on the old galleons full of gold sounds like fun. And it's hard to believe that people thus could have achieved civilization and make all the discoveries that leads to our society today.

I'm kind of interested in sailing because it's so quiet and some time I like to get away from civilization and relax. I like most things in which you can expend a great amount of energy. I'm kind of interested in medicine as a career. The idea of becoming a doctor appeals to me because it is a highly developed and needed skill in the world today. Besides I like to help people when I can.

SECOND AUTOBIOGRAPHY FOR STUDENT C

June 11, 1969

I am a person that likes physical activity, to play pranks and generally have a good time. I will work hard if I am enjoying what I'm doing. I like people but am kind of scared when first making new friends but once the barrier is broken down I get to know them quickly. I think most of this was brought up in me by my parents. My father introduced me to sports and my mother easily made friends with people. I enjoy doing something new after a long stint of the same thing. Anything new just to get out of the rut I am in. I like a little mischief now and then. I would like to go into medicine for a career. The subject has always intrigued me and I enjoy working with people as I did at a doctor's office several times. I've thought about it for awhile and I'm pretty sure I want to go into medicine because new fields are always opening up in it and its hard to believe some of the advances being made in it.

FIRST AUTOBIOGRAPHY FOR STUDENT D

April 17, 1969

1. I am a male student at Bigelow Jr. High. I am obedient at times. I'm not too hot in any school subjects. Just about anything outside of school I am good at.
2. I never got good at anything because I started school with bad marks and I never improved them.
3. I am thinking on going into Auto Mechanics.
4. I'm good at it. I have a job in this career and I like it.

SECOND AUTOBIOGRAPHY FOR STUDENT D

June, 1969

1. I am fairly nice until I get mad. I like to work after school. To me school isn't that great. I like to work on cars or anything in the motor division.
2. I think by watching other people and becoming interested.
3. Auto Mechanics
4. I like to work on engines.
5. No

FIRST AUTOBIOGRAPHY FOR STUDENT E

April 17, 1969

1. I guess down deep I am a good person although I have had my days when I haven't been so good. I am polite and obedient. I am good to all my friends or most all of them. I am the kind of person that likes the out of doors and especially the water.
2. I probably am like this because of my surroundings and my parents and especially the people that influence me but maybe it's just me because everyone's different.
3. I would like to be an electrician and have my own contracting company but I am not sure. I would have to find out more about it.
4. Because I want my own business and like to work outside as well as indoors. I like working with my hands and there is good money in it.

SECOND AUTOBIOGRAPHY FOR STUDENT E

June, 1969

I am a little different than the ordinary teenage boy because I have had experiences maybe older people haven't had. I have had people tell me I am very hard to figure out because there isn't one day in a week that I act the same. I am an honest person sometimes but I find it difficult to be all the time. I am a very demanding person. If I want something I will work until my heart stops and if I can't get it that way I'll get it another. I don't really know how I got to be the way I am because I am completely opposite from my parents and brother. I think my friends had a lot to do with it even though they are all older than me. I think I'd like to be an electrician because I am very good with my hands. I like to do something that has to do with mechanisms also. Electricians make a good salary also. There hasn't been any change so far in my plans although I am not sure that is what I want to do for the rest of my life. I think it is a little early to decide.

FIRST AUTOBIOGRAPHY FOR STUDENT F

April 17, 1969

I'm a very quiet, shy person and self-conscious. I'm not much of a conversationalist except when I'm with a person whom I know very well. I hate big crowds. I love working with people if I know they will cooperate with me. I never lose my temper, unless I have to. (When I do, I stay mad at everybody I see or meet.) I hate arguments especially family. I hate funerals, they scare me. I love weddings. I'm very sensitive (even though I don't show it).

I became this type of person because of my home life. The way I was brought up. We never usually had arguments in which I lost my temper. I became this type of person because this was the most comfortable way for me to act.

I want to go into the Peace Corps, or Vista. I love to help people. I feel that this is something that I've wanted to do for a long time. It would help me plan more for my future and help me, I think personally in my life.

SECOND AUTOBIOGRAPHY FOR STUDENT F

June 13, 1969

I am a very quiet person. I like to be alone where I can fool with my hobbies. I like to paint, listen to the radio and read. I don't speak unless I am forced to speak or when I am talking with somebody. I feel very comfotable with people I know. I don't go out because I would rather stay at home. I would like to go out to usually get away from my surroundings.

The people around me. The atmosphere around me. The way I was brought up. The kind of people I met. They make me feel this way.

I would like to go into a career of working with people. Children especially.

I feel that today people are not being helped properly. They're not being helped, where they need it. Especially emotionally disturbed children. And working with the parents so they will be helped to understand their children.

I feel that there has been a little change in what I wanted to be. Before I wanted to work with people in other countries living in poverty. Today I want to work with people here in the United States. Emotionally disturbed children. I feel that while working with the computer that kids today are not getting the chance to be able to choose a future. They only get through school, probably elementary. In this way, I could help them and emotionally disturbed to prepare a future for themselves. And their parents who refuse to help them in anyway to show them how we would get them to choose their future and why it would be important.

FIRST AUTOBIOGRAPHY FOR STUDENT G

April 17, 1969

1. I am in my opinion a very unique person. I am an individual who goes my own way. I feel that I am very respectable and very well liked. I am sometimes shy and other times not. I feel that in some ways I'm insecure. In other ways, very secure. I am one person who is alot of things. I am sometimes conceited. I say sometimes because that's how it is. Only sometimes I'm everything. I am said to be a very sensitive person and I am also said to be unique and one of my kind. In my opinion and in most people's opinion I am very trustworthy. Everybody I know trusts me. I am this type and it took me a long time to be. I built respect for myself and I tried hard to be what I am. Before I was a nobody but now I am somebody because of what I have done for myself. I have ambitions and I hope to be what I am, like trial and error.

3. I would like very much to be an English teacher for ninth graders. After I teach for a while I will go into school psychology. Then become a school psychologist.

4. I like to work with kids and my ninth grade year was the hardest and my teachers helped me and I felt that I could do alot for troubled kids. I like English very much. I like to write, read, etc. . . I think that's why. But I don't really know.

SECOND AUTOBIOGRAPHY FOR STUDENT G

June, 1969

1. I am a socially and intellectually matured person. Very likable but sometimes I am a lazy person who avoids hard work even though I have the intelligence and ability to do whatever I want.
2. I worked hard for respect and intelligence. Not until this year, the ninth grade, have I been really mature. It took me a long time to be known and personal events in my life made me settle down to become what I am, "A GOOD KID!"
3. I would like to become an English teacher for a few years. Majoring in English and minoring in psychology. Then when I go to graduate school I will major in psychology and become a school psychologist. (I am also a dreamer!)
4. I would like to work with people around my age when I "grow up" to help them and all that.
5. No

FIRST AUTOBIOGRAPHY FOR STUDENT H

April 17, 1969

1. I think I'm the sort of person who at times is easy to get along with but at other times nothing doing. Sometimes if I'm mad I won't cooperate with anyone or anything that's going on. But if I'm in a good mood then most anything goes, especially if it has something to do with getting in trouble, playing the pinball machines, or playing cards or pool.

   I guess I'm sort of daring and willing to do most anything no matter how foolish. Most of the time I enjoy fooling around.
2. Seriously I believe it was the Newton school system. Because you see in the parochial schools I did B work and was a student not a pupil. I believe that in the Newton School System they are too lenient.
3. I'd like to be a lawyer, a real good one. A defense lawyer or not just any old one and I'd like to take on cases that seem impossible and then prove the defendent not guilty.
4. I guess because it's to me a very exciting career. It holds unlimited opportunities for the right people.

SECOND AUTOBIOGRAPHY FOR STUDENT H

June 5, 1969

1. I guess I'm just about the average ninth grade boy of America. I like sports and going to movies.
2. I guess I was born the average way and was brought up right so I'm just an average type kid.
3. I hope to become a good defense lawyer.
4. Because it seems like an exciting career and I think I'd enjoy being a lawyer.
5. No, not at all.

APPENDIX C

Transcripts of the Two Final Group Evaluative Sessions at Bigelow Junior High School

BIGELOW FINAL INTERVIEWS

Session Number I

Monitor: Mrs. Dorothy Kunberger

Monitor: One of the first questions we want to ask is: what do you think of the system?

Boy: As it is now?

Monitor: What do you think of it? As you worked with it, as he explained the system to you and as you became familiar with the way it works. What is your feeling about it as of the present time?

Girl: It would have been very good if it had worked. It never worked. In the middle of something it would fall down and then start all over again from the beginning. Really got very little accomplished.

Boy: The thing is, the process of getting stuff back from Cambridge where it is because by the time you get in there and put your ID number in, the stuff comes back at the end of the period and you have no time.

Boy: When I finally did get some stuff on some colleges they had everything that I wanted except there were little blanks for the information like: I need so many credits, and they didn't have any information. I went through about half an hour getting there and they didn't have any information I wanted, so I wasted all that time. They should have some way just to eliminate that to say now just what information they have and what they don't.

Boy: I found it very aggravating because I couldn't get on the right track. Whenever I'd start something it took them five minutes to understand my question, and then it would tell me that it didn't have any information on that yet. One time I went through ten minutes of getting something and when I finally got it, it said: "No information is available on this at the present time."

Girl: I started on getting information on Brandeis and left it in the middle and came back, and then I spent a whole period trying to get the rest of the information and then couldn't get it -- so they left it right in the middle, the machine fell down.

Girl: I got some job occupations and stuff, but it gave me stuff that's so unrelated -- like they gave me an art teacher and a musician -- and I'm tone deaf and I have no creative ability. They gave me some dumb things for answers.

Monitor: The question is: "What do you think of the system?"

Boy: I didn't see enough of it to know it. I wasn't able to use it enough because the various times I was supposed to use it, it wasn't working well.

Boy: I don't know if I liked the idea of it anyway. It would be nice to be able to ask something and to give the answers to anything you wanted to ask it, but I think it's almost easier to send away for written materials on something that you know you can follow at a nice easy pace and discuss with someone. Talking to a machine is a little difficult.

Monitor: Will you all try to speak up and speak as distinctly as you can? Monica, the question is: "What do you think of the system?"

Monica: I think it's a good system as long as you know what you're doing. I found out quite a bit. If you have a specific topic I think it's good.

Monitor: So it sounds as though most of you think it has some value. Did you get enough information from it to feel that you have learned anything in the area of education or vocation?

Girl: I learned nothing.

Girl: It was fun. It was enjoyable to get out of class and stuff. But I haven't learned a lot. I got a list of jobs and I got one job description, but the machine kept breaking down so much. That's the biggest complaint.

Danny: I don't even think it was fun. I came here just knowing that it would break down. I finally did get a list of jobs. I can see how they got it -- it was fairly close. But in junior high -- our age -- I think you're wasting your system. I think it would be good for college kids and high school kids, like juniors and seniors.

Boy: I agree with Danny that there really isn't much value in it at this time, 'cause we really don't know what we want to do. The only time that I found the machine enjoyable was when it was broken down, or when it was making patterns on the screen.

Girl: When I was using it, it didn't break down at all. And we went through and got a whole bunch of scripts.

Girl: It worked for me, but by the time I finished all the information and stuff, it would be time to leave.

Boy: Yeah, that's the whole thing. You come in here the first day and do what you want to do, and by the time the information comes through it's time to go. And then the next time you come, you have to do the whole thing all over again; you never get to the end of it.

Boy: I think the way it starts is very poor; it says, "What do you want to do today?" I don't know. It's thrown at you and you sort of give up. I don't know what I want to do.

Boy: I know, that's the first thing that came on the slide the first time I used it.

Girl: Some people know what they want to do, so it's not hard for them.

Girl: I knew what I wanted to do, so it was easy.

Boy: The first time you don't even know what the machine does, so how do you know what to do?

Girl: That's what the first time is: they just introduce you to it.

Girl: The first time they didn't do that, though.

Boy: The first time I was here it broke down. I got five minutes on the whole thing.

Boy: It startled me -- all of a sudden: "What do you want to do?" I had no idea what the computer does. I didn't know what was going on.

Boy: Remember all the time we kept asking what it did before we even saw the thing, and she said: "You wait, you wait" -- and she never told us what it did.

Boy: At the very beginning they gave you some directions, they told you things like "Type your name".

Girl: It kept giving me: "What do you want to do?" I knew what I wanted to do so I told it. . .

Girl: I tried nurse, and they didn't have anything on nursing. Then I tried stewardess.

Girl: They should give a list for jobs. A list, a name, a place, that we want to find out about a certain job, and then they'd give a list or name of a job and they'd say, "We don't have it, we don't know that."

With that many jobs, nursing is a very common job; they should have that. They should have a list of cross-references that you can put into the machine because . . . did you try stewardess?

Girl: Yes.

Girl: Because three of us tried it -- and I tried six different ways of putting it and each time the machine didn't understand it.

Boy: The thing that ticks me: when you first get on the system, each time there's a million and one questions you have to go through to get back where you ended the last time. It says: "Do you want to go over this" and so forth. There should be, even a button which says: "Skip everything". And the computer should be able to pick up where you left off. And if you didn't want to do that, you could start all over, if you want to.

Boy: You know what would be nice: if this thing read it to you, so that you didn't have to read it.

Monitor: Did you find the type difficult to read?

Everyone: Yes.

Boy: You started to read it, then you get distracted by the line below.

Boy: It would be a lot better if someone read it to you.

Monitor: You mean audio instead of visual for the directions?

Everyone: Yes.

Boy: But then you couldn't go back.

Boy: You could have both; then if you forgot, you could look back.

Girl 1: I used the console at Harvard, and the type is different; it was real fat and everything -- it was easier to read. I found this was real hard to use.

Monitor: Do most of you feel that this type is difficult to read?

Everyone: Yes.

Girl 1: The other one was real easy to read, and so I think it's just the different consoles, 'cause they tried different print on each console, and I tried three consoles.

Boy: I don't think the idea behind this is good -- to fix your mind that you have to decide all of a sudden what you want to be.

Boy: No! You missed the point. Right now I'm wondering: "What am I going to do?" I'd like to have some idea of what kind of thing I

want to do, so I can maybe start moving towards that direction. Not necessarily commit myself towards it, but have an idea of what I'd like to do. And I think that the console gives you an idea of what jobs are like.

Monitor: You mean what jobs are available to you? That you might like?

Everyone: Yeah.

Danny: I agree with David's theory, but I don't think the machine is the thing that can do it. I don't think it knows enough stuff about you, your personality. You go through about eight or nine questions or so, asking you which you prefer, what income bracket, etc. -- but it doesn't know enough about you personally, your mind, etc. I think it would be much easier to talk to a guidance counselor about it, who knows you as a person, than to a computer.

Boy: That was my point.

Monitor: That was your point too? O.K., fine.

Monica: . . ., it should give you clear-cut and precise information. I don't think the purpose of it is you have to decide now what you want to do, but if you want to find out about a certain job . . .

Monitor: It's an information system. It's not . . .

Girl: It didn't give you too much information.

Monitor: You felt it didn't give you very much information?

Girl: You couldn't get it out of it -- it didn't understand you, or the period was up when it was explaining to you how to use it.

Boy: Or it didn't have the information you wanted.

Boy: The only way you could get information out of it was to work all day on it.

Boy: Yeah, Jeff went two hours straight using it, and apparently he got some good stuff out of it.

Boy: Every time they'd start asking me questions so I'd tried to get a list of jobs, once I got one list, and at the time I couldn't even get the whole list. And the questions . . . all the time it kept saying: "I'm sorry . . .

Boy: . . . you cancelled out all jobs."

Boy: It said: "My choices of colleges are . . ." and it listed one college.

Girl: I cancelled all mine out. It asked "Where do you want to go?" and . . ., and I cancelled all mine out: first I had 400, then I had 120, and then they were all gone.

Monitor: Because you had such . . . requirements.

Girl: Miss Yee said that since you had such a limited amount of jobs anyway, that you have to be sort of general. If you had a few thousand, it would be all right -- that's what is so wrong about it; they only have . . .

Boy: That's why it's useless, because if you have to be general about yourself, if you can't give the answers you want because you're afraid that you'll cancel out all jobs, then you're kidding somebody because you're not telling the truth, you don't want to give the answers you

Monitor: Are you saying that it had a restricting effect on you?

Boy: Yeah, like I said, I want to make $35,000 a year and I wanted to be this, but I couldn't be this, because of this, and the computer put it through that, and so on and so forth.

Girl: You could at least get a list of jobs, but it didn't even do that for me.

Boy: Yeah, but in order to get that list of jobs, you have to be general, which isn't telling about yourself.

Girl: The first time I tried it, they have set two and two and two -- well, she says you can pick one from each group. And so I did, and the first time . . ., five left or something. And I said: "I don't want to cancel them all out" so she said "Just pick one". But if I just picked one, what they might have said might be true, but there might be something else that's very ture too, and you can't differentiate between the two.

Monitor: What about the material? What are some suggestions that you might have for better material, or additional material assuming that the technical difficulties are taken care of?

Boy: Just get more jobs.

Monitor: More jobs?

Boy: Get a psychologist to get questions that would tell some information about you personally, or program the computer beforehand to each person. Have a guidance counselor who can tell some stuff about you,

or a teacher, or anybody. Just so the computer has something to go on about you as a person.

Monitor: Some basic information about you. Did Miss Yee tell you that in the data bank there is some information about you?

Boy: It didn't seem to use it.

Girl: Not very much.

Boy: What is in there? Name and age?

Monitor: Some of your test scores . . .

Boy: Test scores! They're useless.

Monitor: And some of your grades too, I think.

Girl: That's not anything. Grades and test scores don't tell . . .

Boy: That's not telling about you as a person.

Girl: What if you cheated and got 100? It doesn't know a thing about you.

Girl: They gave me a real weird list, and one of the things was a biophysicist. At the time, I liked the way it was spelled, so I wanted to get a job description of it -- that's the only reason: I liked the way it was spelled. So I typed in everything, and they said, "Biophysicist: a professional worker." Now, I mean I already knew that. They gave me some things I already knew -- they were obvious just from the way that the word sounds and is spelled and stuff. It said that you had to be educated to do it, you have to go to college . . . they said stupid, stupid things.

Monitor: And what did you really want to know about it -- biophysicist?

Girl: What the job requirements were. . .

Monitor: Specific requirements?

Girl: Yeah, what you do in general. They didn't tell me anything like that. What type of education you might need, what the income bracket is.

Monitor: Wasn't that all included?

Girl: None of it; all they said was "professional worker, works with things, part of a science" -- really dumb things.

Boy: You should have typed out "Help".

Girl: I did, and they said: "What would you like to be helped on?" and I said: "More information." And then they said: "Don't understand", and Miss Yee told me to write: "specific information", and they said: "What specific information", and I wrote it in, and they just returned it blank.

Monitor: So one of your suggestions is that the data bank should by some means have put into it personal information about yourself. Would you like this? Would you like the idea of personal information . . .

Boy: If it's going to help you, yeah.

Boy: I don't like the idea of . . . I felt this machine had complete control of whatever it was doing. I wasn't telling it what I wanted to do; it was telling me what it wanted to do.

Boy: You had a choice but it didn't say . . .

Boy: Yeah, it said: "I can't give you this, would you like this?" I was so happy to have a suggestion that . . .

GENERAL LAUGHTER

Girl: I think the data bank does have some information about jobs, but I think you should find a better way to get it out -- to help you get the information out of the machine.

Boy: I would just like to see a list of specifics on the screen -- a list like income, specific education, etc., etc. instead of going through all this business about "what information would you like" and so forth. Because by the time you get to it, you're fed up.

Monitor: Can you make any suggestions about the technique of letting the kids know what is actually available to them?

Boy: I don't think you have to do that. You know you're limited to colleges and jobs, stuff like that.

Monitor: And high school choices. Did any of you see the high school template, Newton High School?

Girl: I saw it when I was doing the films up at Harvard.

Girl: I tried it once, and nothing came on. I tried it the whole period and I didn't get anything. I spelled Newton High about six times, and it lit up a skeleton.

Boy: I had to write "Newton High" out about five times before I got it. Once I got it, I was able to get information that was probably the only thing I did get information on. But we had already had it all. This might have been useful before; five months ago, we filled out schedules for next year.

Monitor: Did you get information on the console which you did not get in the brochure -- opportunities?

Boy: I don't think so.

Boy: Not that Miss Nugent didn't answer the questions or something.

Monitor: Do you think that ISVD could be helpful to students?

Everyone: Yeah.

Girl: If you get the information out of it.

Girl: Miss Yee said that we also had some problems with the keyboard -- we'd type in something -- like we'd type in an "A" and it would come out "B" -- and so that also goofed it up. And then we had the worst working one technically, so I suppose it would have been better it it had worked.

Girl: And the film thing, that was supposed to show slides -- that didn't even work when we started.

Boy: I pressed the "run" button, and I saw the whole tray, and that took up half an hour.

Boy: I never saw any of the trays. I saw one slide, I think "K K" and then I pushed the run button and it broke, or something.

Boy: It just keptgoing around and around, all seventy of them.

Monitor: Did they appear on the console?

Boy: Yeah.

Girl: . . . swimming pool; that was the favorite one. Came on about ten times.

Girl: . . . telephone men. I didn't even ask anything about telephone men.

Girl: When it said on the screen: "For the film, push such and such a button" -- when you go to push the button, it comes on. You didn't even touch the button, and it goes on.

Everyone: Right.

Monitor: Who would like to make a summary statement, 'cause we only have a couple of minutes, including all of these points? Who would like to do this?

Girl: The machine was good, theoretically. It kept falling down, breaking down so we couldn't use it, so therefore it didn't serve its purpose.

Girl: With respect to the information, the only problem was getting the information out.

Boy: And it's too impersonal -- it should be more personal. It should have more information about the individual as a person, not a fact sheet.

BIGELOW FINAL INTERVIEWS

Session Number II

Monitor: Mrs. Dorothy Kunberger

Monitor: We want to know a little something about your feelings about ISVD. The first question I'm going to ask is: "What do you think of the system?" Who'd like to answer that?

Boy: It's fun to be with. I looked forward to it, it was really a ball. I got disqualified from one of the colleges a couple of times. And that was about it.

Girl: I thought it was fun. I really didn't use it enough to find out much about it, but I think if I went on with it, I would have appreciated it more.

Boy: Nobody really found out enough about it, 'cause they didn't use it that much.

Boy: It was always breaking down. They just have the improve the whole thing. As soon as I come in, I'll ask it one question -- and it's gone. You get nothing else. So you sit here for the period while they fix it.

Boy: All I want to say has been said . . . breaking down. It was fun basically.

Girl: I liked it. I thought it was really good. Except I was always trying to find the same thing, and I never found it out. It told me the wrong stuff. I got disqualified a couple of times, and I never found out what I wanted to know.

Boy: I thought it was pretty fine. I used it for two hours once -- which is the longest anybody has used it as Miss Yee said -- and I got pretty deep into what I wanted to know. If it expanded into more areas, or it had more colleges and knew more areas which we wanted to know about, I think it would be easier for us; it had a process of elimination for jobs, and they gave certain conditions -- after I had picked the ones which I liked and ones that I didn't like, I ended up with

two: a tugboat driver and a taxi cabber. If they had more jobs, it would be better.

Boy: They really didn't have enough information. They only had 800 and some-odd jobs, they only had 1000 or so colleges. There just isn't that much information in the computer. Like everybody said, it's fun to be with, it breaks down a lot -- it's just not full enough -- they need a lot more information before it can be perfect, or anywhere near it.

Boy: I kind of disagree with that. Miss Yee showed me a list of all the jobs that they had, 'cause I was trying to get one specific subject, and it always came out not balancing, and rejecting, and something. And she showed me on the list that you had to have the code names or something -- you have to type it out whole. So it does have a lot of names; it's just that you have to know which one to put it in under.

Boy: I know it has a lot of jobs, but that's only 800 some-odd jobs, and there's a lot more than 800 jobs in the United States alone.

Boy: We're only 14 years old, and who wants to know every single job there is in the United States? We're only trying to find a certain way of trying to get a job.

Boy 1: Supposing you want to be a street-car driver over in California? Does it have it? No.

Boy: I don't think you want to be a street-car driver in California.

Boy 1: Maybe I do. How do you know? It's not up to you to question what I want to be.

Boy: I know, but this is a computer for most people, not exceptions.

Boy: If you're so convinced you want to be a street-car driver, then you don't need the system to figure it out.

Boy 1: But I want information about it. I don't know how to drive it, I don't know how to get that, there's no training school for it.

Girl: It's not that type of job.

Boy: It's more a matter of practice.

Boy 1: Not really. It doesn't have enough information, it just doesn't. It needs a lot more information.

Monitor: Did you have any problems about getting the information that you wanted to get?

Boy: It wasn't too specific. When you asked about certain colleges, it didn't have enough on it, or it wasn't specific enough, if you wanted academic information, or something like that.

Girl: When I was trying to find out some information on a certain type of college I wanted, it kept answering me back: "I don't understand what you mean." I thought that I'd put it as clearly as I could. I tried different ways to put what I wanted, and it kept saying: "I don't understand." It took me quite a while to find out what I was trying to get.

Boy: It was awful.

Monitor: Why?

Boy: It kept breaking down, like everybody else said. When I asked it a question, it came out something completely different. I only used it about three times because it kept breaking down. Sometimes I liked it, sometimes I didn't.

Someone: The only time I liked it was when I had control of it. Most of the time it had control of me, and I'd ask it a question and it would come back with the answer: "I don't understand" or "It's not computed right", or something like that.

Girl: They should have more commands, _____. . . data column. As a student, you wouldn't be able to just come in and sit down and operate the thing without some understanding. There should be more. . . you should be taught how to use it before you actually go into it. If things like that do happen, then we're stuck and there's always a person needed to help us. If this system expands, there won't be enough people to stand by as each student comes along.

Someone: Sometimes they come out . . . like the colleges ____7, 8, 5, 5, you begin to wonder about it, you come out with really weird answers.

Monitor: If we discount the technical difficulties -- I think we've been talk- about those . . . the breakdowns, the loops, and whatnot, what additional suggestions for improvement would you have? Paul talked about more material. What are some other suggestions for improvement, other than improving the system?

Boy: Like Joe said, you ought to be taught how to use it. You need so many people to watch so many students that it would just be impossible. Like

Miss Yee would sit here all day -- like I was late most all the time, 'cause I'd keep forgetting, and she'd be in here hours and hours and hours, and she'd just wait for the student to come. They can't really have one person for all the students that want to learn. They ought to teach the students how to use it.

Boy: Either that, or simplify it. Because you can't go out and teach thousands of students. If this is supposed to be something like a mechanical guidance counselor, there are going to be a lot more than you can teach who want to use it -- should simplify it.

Boy: There should have been one period in the very beginning where everybody came in, and she showed us what every command meant . . . taken out ten minutes before each of us came in, because the first period that each of us came in for the first lession we spent fifteen minutes to half an hour just learning where all the buttons were, and what this thing does, and what that thing does, what the symbols are for each command. It could have all been said. Half an hour for each person makes _____ waste. So if one period could have been spent just before all this started . . .

Monitor: With the whole group together?

Boy: With the whole group together. You could have told us all this, what this does, what that does, and so on. It would have been a lot easier.

Girl: I think it wasn't specific enough.

Monitor: What do you mean?

Girl: Like the questions . . . when I first used it, it said: "What would you like to do now?" It could mean a lot of things. My brother was doing it, and he said, "I want to play tennis." They didn't really specify what they wanted you to do with the computer. A lot of questions were like that, and I kept pressing send blocks to know what they wanted you to ask.

Girl: Every time you go down and start, you go through the same thing all the time, and by the time you really get established your name, and what you want to talk about, it's time to go. It's all right to do that, maybe for the first time of something, but every time you have to do that, and it's the same thing, and by the time you finished getting all that established, you don't have time to do anything else.

I wish there were some way you could simplify it so you don't have to do the introduction.

Someone: You should finish where you left off last time. When you want to continue what you were doing last time, you have to go through the same process. It takes quite a while.

Someone: Each scene should have a number to it. Each number says like "What do you want to do?" The computer has a place in _____, and there should be a number next to each question or each scene that come up. Then when you come in the next time you start off with pressing which ever scene it was.

Monitor: Any other comments, suggestions about how it can be improved so that it can be more meaningful to you?

Someone: There's not enough time.

Monitor: There's not enough time devoted to it? Or the periods . . .

Someone: The periods are too short. Like I have it at 1 o'clock, and it doesn't go on 'til ten past, and by the time we get it all ready, it's about twenty of and the bell rings.

Monitor: What ways can you think of that ISVD can or could be helpful to students?

Boy: It could be helpful if you were doing a report, _____ like on the American Revolution, and it just had one specific form, like for the American Revolution you just push it and you get all this information about it. It would really be helpful. Or if some kind of teacher was out and you asked the computer for suggestions on what to do, or something like that.

Monitor: Anyone else?

Girl: I think it could be helpful, the way it finds the college and job that you're best suited for, but I think it has to be improved, because it didn't find it out for me, and I tried it three or four times.

Boy: For us it's not that helpful, but when I went to Harvard, a lot of college students came in. The group was going to come in was late, and and a girl wanted to know if she could finish her project using the computer which she obviously had a program for. College students can use it in this way, but I think now, in junior high school and high school, we'd have to know a little bit more about it, _____ quite so demanding as the ones that are in college.

Monitor: Did anyone ask the system to get any information about Newton High School?

Boy: It told me about how long the periods are, what time the school day starts and ends. It just tells you stuff you already know. If you want to know more about the houses it just tells you how many faculty members are in it, and stuff like that.

Monitor: What did you want to know, Lee?

Lee: I really wanted to know more like how many classes they had, and the working process.

Boy: Like can you go to the Commons Room, or can you have a cigarette in the Commons Room, can you have a Coke, can you just go there any time you want -- stuff like this. But it won't give it to you, 'cause it's programmed just to give you more the facts . . .

Boy: General knowledge. Most people don't want to know about having a Coke in the Commons Room, or something like that -- that's not important to them. They want to know how is Newton High School going to help them in their future, what subjects are they going to take, and how many credits, stuff like that. They introduced stuff about the housing, and subjects, and after that they said: "Which of these interests you the most?" Say you picked the houses, you could go on _____. But they didn't have that; they just stopped short.

Monitor: These probably weren't completed, but I feel pretty sure that these are to be included later, information on the curricula, Curriculum I, II, III T and so forth. Is this the kind of information you would like to get from the computer?

Boy: Like about Newton Technical High School, most people don't even know there's a _____ -- they don't know stuff about it. So if you were interested in it, and you didn't know there was one or not, it's not going to tell you through this, 'cause I asked about Tech and it just didn't know that much about it.

Boy: It just says it has eleven different trades, or something.

Boy: And it didn't name them.

Monitor: Any other ways that you can think of that this could be helpful, the system could be helpful?

Boy: It could be helpful to the sixth grade about coming up here, or to any other junior high. Or maybe if you were going into a _____ school,

and you wanted to know about the system, the Boston School System. Like there, it's legal to hit a kid with a stick, _____, maybe some kid wanted to know whether it was legal or not if he could hit him. There it could be helpful, or just coming up to a place like this.

Monitor: I think we have to go back to Jeff again to answer that criticism, Paul.

Paul: About what?

Monitor: About your remark that you just made. Do you know what I mean, Jeff? Isn't Paul asking for unusual items?

Paul: It's not unusual to me -- that's what I'd want to know.

Girl: It would be helpful to eighth graders. In the eighth grade you have fill out a sheet of electives, and major and minors, and E Blocks and C Blocks. And half the kids said: "What the heck is a C Block or E Block?" It could explain it to them. Like when we came in to Bigelow this year, C Block was very confusing, E Block was very confusing, elective -- what's the difference between E Block and elective? It's like having two electives. A lot of people could ask, and they could find out from the computer.

Monitor: So you think it could be used to clarify the offerings in the ninth grade, and the questions that the eighth grade kids have to ask their teachers. This could be done better if it were programmed into the system. One last question -- I think you've probably answered it -- do you feel this experience was helpful in any way?

Boy: It was interesting, but I don't think it was very helpful. Unless of course you've got a college, or one of many colleges you wanted to go to, or maybe a job that you were looking for. But otherwise I can't see how it would be helpful.

Someone: Maybe it was helpful in a way, because this was our first time on a computer, and we now know what a computer does. The first year wasn't that great, but just how to use it and the ways that you . . .

Monitor: Darlene, what was your reaction, or have you given it?

Darlene: I've given it. I think it was a good experience for us to use it. I can't say it was helpful for me either, but I think it could have been if I had used it more.

Girl: I agree. If we had had more time.

Girl: I think it was helpful in a way if you want to go on with it. Like next year they have sort of the same program with the computers, and if you really want to do it, I think it's helpful 'cause at least you know how to use it, you know more than you did before.

Boy: It was helpful for me, because it was only broken down once when I was on it, so I got most of the information I wanted.

Monitor: That's good, Lee?

Lee: It wasn't that helpful for me, but I fugure that if we had known what the commands were -- like the different jobs it has the lists of what to sign it in under, then it would be more helpful if you knew right away what to sign it in on. But I didn't find out about the sheet, until a couple of weeks ago when it was too late.

Monitor: I think everybody appreciates the fact that you kids gave your time and your effort, and I know you realize it was for a good cause, a scientific experiment, and that you're part of a project that is worthwhile, and I'm sure will develop into something that is really very good.